PACIFIC GAS AND ELECTRIC COMPANY
QUALITY ASSURANCE DEPARTMENT

Title: Systems Interaction Program Activities

Audited Organization/
Facility: Systems Interaction Program, Nuclear Projects

Auditors: T. G. de Uriarte (Lead Auditor)
R. T. Twiddy
E. S. Liang

Dates Performed: April 1 to December 31, 1980

1.0 Scope

The audit was conducted to verify that the Systems Interaction Program (SIP) is being implemented in accordance with SIP procedures and that the walkdown methods used are effective in identifying potential interactions.

2.0 Persons Contacted

+*V. L. Killpack - SIP Project Engineer
*H. J. Hansen - SIP Engineer
*J. B. Hoch - Project Engineer
R. L. Cloud - R. L. Cloud & Associates
R. L. Sorbi - Project Engineering Office
E. Valeriano - Engineering
P. Teames - Engineering
B. O'Malley - Design Drafting
G. Singh - Design Drafting
M. Jones - R. L. Cloud & Associates

*Denotes those persons attending the preaudit conference.
+Denotes those persons attending the interim exit interview.

3.0 Conclusions and Exit Interview

This portion of the audit completed the first three parts of a five-part plan for the Quality Assurance Department's Independent Audit of the SIP. See Appendix A for summary of audit activities.

The activities audited were found to be in compliance with SIP procedures. Engineers participating in walkdowns were well prepared and received indoctrination in all phases of the walkdown activities and interaction criteria.

ATTACHMENT 10

TO THE PGandE

SEISMICALLY INDUCED SYSTEMS INTERACTION PROGRAM

FINAL REPORT

SYSTEMS INTERACTION PROGRAM AUDITS

This attachment contains the results of two audits of the SISIP.

1. Program Audit
2. Procedure Audit

No nonconformances or open items were identified.

The flow of paperwork was verified to be in compliance with SIP procedures. The remaining parts of the five-part plan have been deferred until a suitable number of document packages have been completed. Estimated audit dates for the documentation parts is mid-1981.

Performed by: T. G. de Uriarte
T. G. de Uriarte

R. T. Twiddy
R. T. Twiddy

T. G. de Uriarte for ESL
E. S. Liang

Approved by: _____
S. M. Skidmore

Attached: Appendices A & B

APPENDIX A

AUDIT ACTIVITIES

1.0 Summary of Audit Activities

1.1 Independent Audit Plan

The Independent Audit has been divided into five parts:

a. Perform, on a sampling basis, walkdowns of representative compartments and any related intercompartmental interactions;

b. Perform audits of previous intercompartmental walkdowns;

c. Perform, on a sampling basis, independent analyses to verify that the previous analyses were performed correctly;

d. Review program documents;

e. Review completed modifications and verify compliance with SIP procedures.

This audit completed the first three parts.

1.2 Walkdown of Randomly Selected Systems

Engineers were requested to participate who did not have direct involvement in the SIP. The engineers were:

I. Sokoloff - Civil/Structural
E. G. Nichols - HVAC
R. E. Bacher - Pipe Supports
F. J. Cucco - Instrumentation and Controls
R. A. Young - Electrical
J. L. Potter - Mechanical Equipment

Each engineer was given copies of the interaction criteria for all areas of expertise. Each was expected to be familiar with all criteria but to be specifically responsible during walkdowns for his own area of expertise as indicated above. Copies of system Matrices and P&ID's were also given to each engineer for the systems we would cover.

On May 7, 1980, the audit team comprised of de Uriarte, Twiddy, Sokoloff, Cucco, Potter, and Nichols participated in a walkdown being performed by the SIP team. The SIP team reviewed Matrices 19-27 through 31, 20-01 through 47, 10-01 through 18, and 11-01 through 08; P&ID's 102011 sheet 2, 102014 all sheets, and 102008 sheets 3, 4, and 4B.

The audit team observed walkdown method, preparedness of walkdown team members, methods of recording data and identifying potential interactions, and interface with site personnel. No discrepancies with procedures were noted. All personnel were well prepared and many items such as loose bolts, spare parts, housekeeping, etc. which required attention but were not interactions were noted by the walkdown team and reported to site personnel. Drawing discrepancies noted were reported to Engineering.

1.3 Audit of Previous Walkdowns

The auditors selected two systems to be walked down, System No. 07, Pressurizer Instrumentation, and System No. 17, Boron Injection. These included Matrices #07-04 through 14, and No. 17-01 through 17, and P&ID's 102007 sheet 4, and 102009 sheet 4. These two systems had been completed by the SIP walkdown team and had actual interactions identified. This information was not shared with the technical members of the audit team and then on May 20, 1980, the audit team of de Uriarte, Twiddy, Bacher, Cucco, Potter, and Sokoloff walked down the two systems. The potential interactions noted by the audit team were recorded on SIP forms, entered into the evaluation system of the SIP, and all entries which were determined to be valid interactions requiring some corrective measures were compared with the valid interactions identified by the SIP walkdown team previously for the same systems and known only by the Lead Auditor. No discrepancies existed between the original walkdown and the test walkdown. The engineers that participated on the audit walkdown team were all senior personnel from the respective disciplines and did a very thorough job in the opinion of the Lead Auditor. The audit walkdown was considered by all participants to be an effective evaluation of the walkdown process, the documentation process, and the walkdown planning and preparation process.

1.4 Independent Analyses of Previous SIP Analyses

The SIP provided for potential interactions identified during walkdowns to be analyzed in accordance with SIP criteria and system design criteria to determine whether an interaction existed or not. If an interaction existed, corrective measures had to be prescribed.

The audit team of de Uriarte and Liang selected several interaction document packages from the SIP files which had already been analyzed, found to be interactions, and corrective measures prescribed. These document packages were then assigned through the Engineering group leaders to reviewers who were familiar with the SIP criteria but had not reviewed the packages selected. The packages were reviewed again as "new" potential interactions (not identified as having been reviewed before) and were again all found to be interactions. The conclusion was that the review process was well controlled, took place in accordance with procedures, and the individuals assigned had adequate knowledge of the criteria.

This part of the audit was then continued at the Berkeley offices of R. L. Cloud and Associates (RLCA). On December 5, 1980, de Uriarte and Liang visited the RLCA offices to review the flow of documents. After reviewing several document packages chosen at random from several walkdowns, it was concluded that the RLCA process represented a complete review and satisfied the SIP procedural requirement for a "separate analysis" of all analyses of interactions. It was also verified that all modification packages coming from RLCA to PGandE go through the appropriate discipline supervisors for review for system compatibility prior to release to the field.

2.0 Scheduled Completion of SIP Audit

The remaining two parts of this audit will have to be done at a later date. In order to effectively audit the processing of program documents, a suitable number of completed documents needs to exist to select an audit sample form. The first three parts of the audit plan involved the basic activities of the SIP and were determined essential to audit early in the program. That is now complete. It is estimated that several months will have to pass in order to provide enough data to perform the final two parts of the audit.

047383

PACIFIC GAS AND ELECTRIC COMPANY

77 BEALE STREET • SAN FRANCISCO, CALIFORNIA 94106 • (415) 781-4211 • TWX 910-372-6587

S. M. SKIDMORE
MANAGER
QUALITY ASSURANCE DEPARTMENT

March 29, 1984

PGandE File No. 505.6 x 026.14
Your Letter Dated January 24, 1984
(CHRON 042158)

Mr. J. B. Hoch
Diablo Canyon Project
10th Floor, B29
45 Fremont Street
San Francisco, CA 94105

Dear Mr. Hoch:

In response to your January 24, 1984, request, attached are Activity Audit Nos. 01216, 83022A, 83171A, and 83173A; and Program Audit No. 12304.

These audits are the remaining two parts of the Independent System Interaction Program audit plan that is referenced in Quality Assurance Program Audit No. 83206P.

Sincerely,

S. M. Skidmore

SMS:mrm

cc: M. J. Jacobson
L. W. Horn

Attachments

RAY JHR LWH DEH — SPECIAL PROJECTS — DLK KLM LH CO

APR 3 1984

PLEASE HANDLE COMMENT ROUTE CENTRAL FILES — UREPLY PREPLY DISCUSS

RECEIVED
MAR 30 1984
DIABLO CANYON 15383

76-292 (Rev 5/79) ACTIVITY AUDIT

047383

Pacific Gas and Electric Company
Quality Assurance Department

Audit No.: 01216

Title/Subject: SYSTEMS INTERACTION PROGRAM
VIBRATION ANALYSIS

Audited Organization/ Facility: NUCLEAR PROJECTS
DIABLO CANYON POWER PLANT

Auditor(s): MS DOBRZENSKY Date(s) Performed: 12/8/80 TO 12/10/80

0005 3 . 4 7 8 6

1.0 Scope

Verify that the Vibration Analysis being performed by D.E.R. on non-vital cable tray supports is in accordance with an approved procedure and calibrated instruments are used for recording data.

2.0 Persons Contacted

V.L. Killpack	Nu. Proj.	J. Williams	D.E.R.
C. Paquin	D.E.R.		
D. Taylor	D.E.R.		

* Denotes those persons attending the exit interview.

3.0 Conclusions

The Vibration Analys , is being performed in accordance with a procedure entitled, "Test Procedure for the Diablo Canyon Cable Tray Support Vibration Analysis". All of the instruments used for recording data appear to be in current calibration. (Determined from the calibration stickers, affixed to the instruments.)

No problems were noted.

(over)

76-292 (Rev 5/79)

047383

00053.4787

4.0 Effectiveness of Elements Audited

Criteria 5, "Instructions, Procedures and Drawings"

Criteria 12, "Control of Measuring and Test Equipment"

These appear effectively implemented.

5.0 Details of Audit

1. Verify calibration dates for the following instruments:
   - 401B Signal conditioner
     Cal. 11/10/80 due 5/10/81
   - 411B Omniferous dual channel FFT analyzer
     Cal. 11/10/80 due 5/10/81
   - 7003 DVM
     Cal. 11/4/80 due 5/4/81
   - 965A Vibration Inst. Co.
     Cal. 11/4/80 due 5/4/81

   These two instruments were out of calibration but the D.E.R. personnel said they were not being used for recording data.
   - 8922A True RMS voltmeter, U.S. Instr #49757 Cal. expired 11/80
   - 403A AC transistor voltmeter, Co. #117.107.7 Cal. 7/22/74 due 7/75

2. Data has been taken for supports on tray ARC and TAEB which are non-vital.

6.0 References

"TEST Procedure for the Diablo Canyon Cable Tray and Cable Support Vibration Analysis" 12/4/80.

7.0 Signature(s) **Date(s)**

Signature(s)	Date(s)
Michael S Cirkzenis	12.15.80
R.T. Tweddy	12-15-80
[signature]	12-16-80

69-029 (11/81)

ACTIVITY AUDIT

Pacific Gas and Electric Company
Quality Assurance Department

Audit No.: 83022A

Title/Subject: SIP OIRs Resolution and Corrective Action Verification

Audited Organization/ Facility: Diablo Canyon Project

Auditor(s): T. G. de Uriarte
U. S. Aguas

Date(s) Performed: 1/26/83

1.0 Scope

Evaluate and verify response and corrective action to SIP OIRs as appropriate. (Ten active OIRs were issued to the SIP group as a result of previous audits.)

2.0 Persons Contacted

*L. W. Horn - SIP Project Engineer

* Denotes those persons attending the exit interview.

3.0 Conclusions and Effectiveness of Elements Audited

All ten (10) OIRs were verified to have been resolved and corrected. All these items are now closed.

OIRs which referenced requirements from "W" Procedures which used to be in the NPG Manual were closed by the issuance of OIR 83-017. The "W" Procedures were found to be currently nonexistent and uncontrolled. Incorporating the requirements of these procedures as appendices in the SIP Manual was tentatively agreed to as an acceptable way to resolve this deficiency. This report addresses follow-up and verification of all OIRs that have been issued to the SIP only. Effectiveness of elements audited does not apply.

(over)

4.0 Details of Audit

The following OIRs were closed based on their respective verification:

1. OIR 006-82 - Action Request Transmittal forms not being reviewed for completeness.

Verification - Action Request Transmittal forms are not being handled through EDP 3.6 ON and NPG Procedure W-681 (Refer: OIR 83-017 regarding the use of this NPG Procedure). OIR is closed.

2. OIR 007-82 - IDS not being signed off.

Verification - Added procedural controls per SIP Manual, paragraph 5.2. OIR is closed.

3. OIR 009-82 - Matrix items with no postulated interaction not in RMS.

OIR 010-82 - No procedure for indexing matrix items.

OIR 011-82 - Unaccounted "deleted" matrix items.

Verification - Response from audit satisfactory to close out these items. Refer to letter of 11/1/82, J. B. Hoch to W. A. Raymond. SIP Consultant (Contract 31-14-82) is in the process of certifying SIP Matrix. Upon completion, all items will be indexed into RMS (to serve as data base).

(Continue on Sheet 2 of 2.)

5.0 References

SIP OIRs - Quality Assurance OIR Log

SIP Manual, Revision 2, 5/15/82

Engineering Department Manual Procedure 3.6 ON, Rev. 1, 8/9/82.

6.0 Signature(s) Date(s)

Thomas G. de Ghiaste (Lead Auditor) 2-11-83

(Responsible QA Supervisor)

W. A. Raymond 2-14-83

4.0 Details of Audit

SIP Manual, Chapter 4, paragraphs 4.2.6 and 4.3.2.2 reinforces the requirements for indexing all items into Records Management System (RMS). All three OIRs are closed.

4. OIR 012-82 - Intercompartmental walk-downs are not being conducted.

Verification - All matrix items for Unit No. 1 have been walked down by the SIP team. Interactions that may occur among "compartments" have also been considered during these walk-downs. This included intercompartmental interactions of designated fire zones, seismic zones, etc, which were also covered by separate studies. These "compartments," which are being evaluated during the walk-downs do not require separate documentation alongside each matrix item. The data entered into RMS Computer base contains all postulated interactions and pertinent information contained in the IDS sheet. OIR is closed.

5. OIR 013-82 - Walk-downs have not always been conducted with a full SIP team.

Verification - Each SIP team member selected for the SIP has been evaluated for technical competence, qualification, and involvement with one or more Diablo Canyon Power Plant activities. Since results from the walk-downs undergo a series of technical evaluations and reviews, there is no potential problem in not having a full SIP team for every walk-down. OIR is closed.

6. OIR 015-82 - Incomplete paragraph in Nuclear Power Generation (NPG) Procedure W-680.

OIR 018-82 - Inconsistencies in NPG Procedure W-680.

Verification - OIRs are closed as a result of OIR 083-17.

7. OIR 110-82 - Fire sprinkler branch line has excessive sway. Problem resolution was not completed as of 6/4/82.

Verification - Letter of 12/28/82, L. W. Horn to M. J. Jacobson. This item has already been identified in Matrix 20-03-01-01 and is not in itself a discrepancy. Response from SIP group is satisfactory. OIR is closed.

69-029 a (02/83) **ACTIVITY AUDIT**

Pacific Gas and Electric Company
Quality Assurance Department

Audit No.: 83171A

Title/Subject: System Interaction Program
For de Containment - Unit 1

Audited Organization/ Facility: QPEG
Diablo Canyon Power Plant

Auditor(s): D.F. Vullemin Jr (Lead Auditor) **Date(s) Performed:** 5-16 & 16-83

1.0 **Scope**

Verify procedures and documentation have been prepared to fulfill the System Interaction Program (SIP) requirements.

2.0 **Persons Contacted**

G. Spease (QPEG-QC)
C. Vanlitta (QPEG)
L. Dresbach (QPEG-QA)

+ Denotes those persons attending the preaudit conference.

* Denotes those persons attending the exit interview.

3.0 **Conclusions and Effectiveness of Elements Audited**

System Interaction Program appears to be adequate and properly implemented. No items of noncompliance were identified.

(over)

83

4.0 Details of Audit

Verified the following items:

a) Program procedures exist

b) Interaction documentation sheets are being used

c) IDS's are being properly completed, resolved and signed off.

d) Completion of work for ART's and DCN's

The IDS's, ART's and DCN's verified are listed on the attached sheet.

5.0 References

"Description of Systems Interaction Program ... Diablo Canyon Units 1 & 2"

"Program Manual: System Interaction Program (SIP)"

"System Interaction Function Matrix"

6.0 Signature(s) Date(s)

[signature] (Lead Auditor) 5-16-83

[signature] (Responsible QA Supervisor) 5/24/83

[signature] for SMS (Manager, Quality Assurance) 6-1-83

Audit No. 63171A

Inside Containment

IDS No.	DCN No.	ART No.
56-01-01-08	DC1-EC-5349	-
16-60-04-03	DC0-EP-5552	-
16-60-21-0A	DC0-EP-5552	-
5-01-116-01	DC1-EM-758	-
5-01-116-02	DC1-EM-758	-
02-01-0A-03	-	166
03-55-01-02	-	278
3-16-05-03	-	21
15-32-05-02	-	33
15-01-101-03	-	2

69-029 a (02/83)

ACTIVITY AUDIT

Pacific Gas and Electric Company
Quality Assurance Department

Audit No.: 83173A

Title/Subject: System Interaction Program Outside Containment - Unit 1

Audited Organization/ Facility: CPEG Diablo Canyon Power Plant

Auditor(s): D.M. Vullaimier Jr (Lead Auditor)

Date(s) Performed: 5-16 to 18-83

1.0 Scope

Verify procedures and documentation have been prepared to fulfill the System Interaction Program (SIP) requirements.

2.0 Persons Contacted

E. Spiese (CPEG)
L. Dreshback (CPEG)
J. VanLotta (CPEG)

\+ Denotes those persons attending the preaudit conference.

* Denotes those persons attending the exit interview.

3.0 Conclusions and Effectiveness of Elements Audited

The Systems Interaction Program appears to be adequate and properly implemented. No items of nonconformance were identified.

(over)

69-029 b (02/83)

4.0 Details of Audit

Verified the following:

a) Program Procedures exist.
b) Interaction documentation sheets are being used.
c) IDS's are properly completed, resolved and signed off.
d) Completion of work for ART's and DCN's

The IDS's, ART's and DCN's verified are listed on the attached sheet.

5.0 References

"Description of the Systems Interaction Program ... Diablo Canyon Units 1 & 2"
"Program Manual: System Interaction Program"
"System Interaction Function Matrix"

6.0 Signature(s) Date(s)

Clifton J. Williamson Jr. (Lead Auditor) / 5-19-83

(Responsible QA Supervisor) / 5/24/83

Leslie Tristani for SMS (Manager, Quality Assurance) / 6-1-83

Audit No. 83173A

Outside Containment

IDS No.	DCN No.	IRT No.
06-59-21-01	DC0-EP-5552	—
11-05-19-01	DC1-EE-669	—
15-01-29-01	DC1-EP-5547	—
17-01-01-01	DC0-GC-2385	—
24-07-06-05	DC1-EP-3689	-
01-09-02-07	—	192
01-15-02-01	—	191
01-20-02-01	—	234
01-20-02-02	—	193
01-20-02-03	—	190

035516

QUALITY ASSURANCE PROGRAM
PROJECT AUDIT REPORT

031629

1 PROJECT: Diablo Canyon Unit OPEG
2 JOB NO.: 15320
3 TYPE OF AUDIT: Project Engineering
4 ORGANIZATIONS AUDITED: Systems Interaction and Engineering
5 AUDIT NO.: 30.1-3
6 AUDIT DATE: 8/22 - 9/9/83
7 AUDITOR: P. Hornbeck - Lead
W. P. Franzen, F. Zerebinski

8 INDIVIDUALS CONTACTED: L. Horn, R. Oman, M. Leppke, G. Spease, C. Van Natta, B. Walker, E. Green, J. Meierdierks, S. Chesnut, N. Barangan

9 DESCRIPTION OF AUDIT (SCOPE AND EVALUATION)

Verified that Systems Interaction Group is performing activities in accordance with PG&E Systems Interaction Manual Rev. 3 and OPEG is performing activities in accordance with Engineering Manual Procedures.

Twenty-nine postulated interactions were sampled to verify implementation. The Systems Interaction Group and OPEG are effectively implementing the Systems Interaction Program with the exception of the area where a finding was identified. One Quality Audit Finding requiring action has been identified as shown below.

10 DEFICIENCIES NOTED (QAF NO.) (SEE ATTACHED)	ACTION	
	11 RESPONSIBILITY	12 COMPL SCHED DATE
QAF-1 Drawings are being issued "approved for construction" prior to approval of design calculations.	B. Oman	10/20/83

AUDITOR(S) SIGNATURE: PC Hornbeck-Lead W. P. Franzen F. Zerebinski DATE: 9/13/83

SFP-20604

4212a/1-240

035516

QAF-1

QUALITY ASSURANCE FINDING

031629

PAGE 1 OF 1

1. PROJECT/DEPARTMENT/SUPPLIER	2. TYPE OF AUDIT/SURVEILLANCE	3. AUDIT IDENT.
Diablo Canyon Job 15320 Unit 1	Project Engineering OFFICE ☐ FIELD ☒	30.1-3
4. AUDITOR	**5. DATE OF FINDING**	**7. DISCUSSED WITH**
W. Franzen, F. Zerebinski	August 24, 1983	R. G. Oman E. L. Green G. C. Spease
6. CONTROLLING DOCUMENT, SECTION, PARAGRAPH, ETC.		
PG&E Eng. Man. Proc. 3.3 Rev. 5 Para. 4.0		

8. REQUIREMENTS

"...Applicable design calculations shall be approved prior to issuing approved-for-construction drawings. ..."

9. FINDING

Contrary to the requirements above, drawings are being issued "approved for construction" prior to approval of design calculations.

Example: IDS 10-13-03-06, Pipe supports added under DCN DC1-EP-3608 (56N/75R and 56N/81R) design drawings issued 10/21/82. Supporting calculations have not been approved to date by a Group Leader or Supervisor.

10. RECOMMENDED ACTION/S

Remedial Action:	Review and approve the calculation cited above
Investigative Action:	Review that all design calculations supporting issued "approved-for-construction" design documents after August 20, 1982, as a result of SIP, are approved by the OPEG Piping Group Leader or Supervisor.
Corrective Action:	Instruct cognizant personnel to comply with the approval requirements for calculations prior to issue of design drawings.

11. SCHEDULED COMPLETION DATE	12. RESPONSIBILITY FOR CORRECTIVE ACTION
October 20, 1983	R. G. Oman

13. CORRECTIVE ACTION TAKEN

All design calculations supporting issued "Approved for Construction" design documents as a result of SIP have been reviewed and approved by an appropriate OPEG supervisor. Cognizant personnel have been reinstructed to comply with the approval requirements for calculations prior to issue of design drawings. (Ref: IOM R. G. Oman to Distribution Doc #SMD-0033

14. DATE COMPLETED	15. SUBMITTED BY RESPONSIBLE AUTHORITY	16. CORRECTIVE ACTION	
5OCT83	RG Oman	ACCEPTED / NOT ACCEPTED	VA Dreisbach QAE

17. VERIFICATION ACTIONS BY QAE

1. Confirmed that calculation for supports 56N-75R and 56N-81R have been approved by a Group Leader Supervisor.
2. Also verified corrective action effectiveness by noting approval of calculation SIP 417 and SIP 456 prior to respective dwg release

18. IMPLEMENTATION		DATE
ACCEPTED / NOT ACCEPTED	VA Dreisbach QAE	10/24/83

19. DISTRIBUTION

SFP 4690a

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035504

QUALITY ASSURANCE PROGRAM
PROJECT AUDIT REPORT

1 PROJECT: Diablo Canyon Unit 1
2 JOB NO.: 15320
3 TYPE OF AUDIT: Project Engineering
4 ORGANIZATIONS AUDITED: Systems Interaction
5 AUDIT NO.: 30.1-1
6 AUDIT DATE: 8/15 - 8/31/83
7 AUDITOR: P. Hornbeck - Lead
W. P. Franzen, F. Zerebinski

8 INDIVIDUALS CONTACTED
L. Horn, E. Punzalan

9 DESCRIPTION OF AUDIT (SCOPE AND EVALUATION)

Verified that Systems Interaction Group is performing activities in accordance with PG&E Systems Interaction Manual Rev. 3.

Fifty-five postulated interactions were sampled to verify implementation, most being initiated prior to Bechtel's involvement. The Systems Interaction Group is effectively implementing the Systems Interaction Program with the exception of the area where a finding was identified. One Quality Audit Finding requiring action has been identified as shown below.

Verified that Engineering is performing design activities relative to the closure of postulated interactions in accordance with the Engineering Manual Procedures.

10 DEFICIENCIES NOTED (QAF NO.) (SEE ATTACHED)

	ACTION	
	11 RESPONSIBILITY	12 COMPL SCHED DATE
QAF-1 Modifications do not always have the necessary signatures for completion.	L. Horn	10/10/83

AUDITOR(S) SIGNATURE: PB Hornbeck - Lead; F Zerebinski. W. Franzen

DATE: 9/1/83

SFP-20604

031172

QAF 035504

QUALITY ASSURANCE FINDING

1. PROJECT/DEPARTMENT/SUPPLIER	2. TYPE OF AUDIT/SURVEILLANCE	3. AUDIT IDENT.
Diablo Canyon Job 15320	OFFICE ☒ Systems Interaction FIELD ☐	30.1-1
4. AUDITOR	**5. DATE OF FINDING**	**7. DISCUSSED WITH**
W. Franzen, F. Zerebinski	August 25, 1983	L. Horn
6. CONTROLLING DOCUMENT, SECTION, PARAGRAPH, ETC.		
Program Manual: System Interaction Program Rev. 3 Sect. 5: 5.2.1.3		

8. REQUIREMENTS

For work resolved by Plant Modification four (4) signatures are required to close out this category IDS:

1) Originator/Date
2) Reviewer/Date
3) SISIP Discipline Supervisor/Date
4) Field Verification/Date

9. FINDING

Completed IDS's 25-117-05-01, 03-22-03-01, 03-22-02-02, 03-24-02-01 and 03-24-01-01 do not have the required SISIP Discipline Supervisors' signature or date.

10. RECOMMENDED ACTION/S

Remedial Action: Obtain SISIP Supervisors' signatures on those IDS's already identified.

Investigative Action: Review all IDS's requiring modifications to assure SISIP Supervisors' signature.

Corrective Action: Take action as necessary based upon the results of the investigative action.

11. SCHEDULED COMPLETION DATE	12. RESPONSIBILITY FOR CORRECTIVE ACTION
October 10, 1983	L. Horn

13. CORRECTIVE ACTION TAKEN

The Quality Audit Finding listed above has been investigated. Each of the referenced IDS's were completed during the normal course of construction by nonSIP groups. The SIP resolutions were not implemented. Since these modifications were made independent of the Systems Interaction Program, resolutions generated through SIP were no longer required. The field construction was found to be acceptable by the consultant technical review and were field verified in accordance with the Program Manual. Therefore, the SISIP discipline supervisor's signature was not necessary. (Continued on Page 2 of 2 of QAF)

14. DATE COMPLETED	15. SUBMITTED BY RESPONSIBLE AUTHORITY	16. CORRECTIVE ACTION		
		ACCEPTED	NOT ACCEPTED	QAE

17. VERIFICATION ACTIONS BY QAE

18. IMPLEMENTATION			
ACCEPTED	NOT ACCEPTED	QAE	DATE

19. DISTRIBUTION

Quality Assurance Finding

13. CORRECTIVE ACTION TAKEN (Cont'd.)

Other anomalies that may be present in the hardcopy files will be resolved during SIP's complete review of Unit 1 IDS files prior to completing the RMS data base and issuance of the Final Report to the NRC.

ATTACHMENT 11

TO THE PGandE

SEISMICALLY INDUCED SYSTEMS INTERACTION PROGRAM

FINAL REPORT

INDEPENDENT REVIEW BOARD:

FINAL DETERMINATION LETTER

This attachment contains the final report of the SISIP's Independent Review Board.

KEITH, FEIBUSCH ASSOCIATES, ENGINEERS
220 MONTGOMERY STREET • SAN FRANCISCO, CALIFORNIA 94104 • (415) 421-0828

October 9, 1981

Mr. John B. Hoch
Manager, Nuclear Projects
Pacific Gas and Electric Company
77 Beale Street, Room 1453
San Francisco, California 94106

SUBJECT: Systems Interaction Review Board Final Report

Dear John:

Reference is made to the Review Board's first report dated May 9, 1980, and subsequent letters to PGandE dated October 7, 1980 and October 30, 1980 (Second Report). These documents set forth the Review Board's review procedures and findings to date.

During meetings of the Review Board conducted with PGandE on January 8 and 9, and August 24, 1981, several comments were made to you which are documented herewith. During the August 24 meeting the Review Board also provided editorial comments on Revision 0 of the "Final Report - Systems Interaction Program - Diablo Canyon Nuclear Plant, Volumes 1 and 2." Those editorial comments are not reproduced here.

1. The Board was surprised to find that no intercompartmental interactions were discovered during the original walkdowns. The Diablo Canyon plants have been previously upgraded to contend with flooding requirements and flooding seems to be the principal mode of intercompartmental coupling between sources and targets. Discussions with PGandE walkdown team members indicated that, in the absence of the flooding upgrade modifications, such intercompartmental interactions would have been recorded. PGandE's final report on the seismic system interaction program should reflect, to some extent, the beneficial effect of these prior programs in reducing the scope of the current effort. The Board believes that attempts by other utilities to duplicate this seismic system interaction program will result in intercompartmental interactions.

2. The Board had some concerns initially about the quality assurance and quality control associated with system interactions requiring modifications to existing plant structures. (The Board assumes, in the absence of contrary information, that no modifications to plant operating procedures were required.) These concerns were resolved in discussion with PGandE personnel on January 8, 1981,

when PGandE described the use of the action request transmittal (ART) document. Since the standard "design change notice" does not apply to many of the situations where modifications were required, PGandE personnel devised the ART. Its purpose is to trigger the modifications by the PGandE Construction Department, while providing QA traceability. Where design change notices are applicable, they are attached to the ART. The ART derives its traceability from its role as a signatory document both before and following the modification. The Board compliments PGandE on the ART development which they consider a significant quality assurance device.

3. The Board recognizes that the current study represents no more than a portion of the overall interaction programs examined by PGandE with respect to the Diablo units. A few examples of earlier studies are the assessment of the Hosgri Fault, high pressure lines outside containment, and control of pipe whip. The Board suggests that a description of all relevant studies be incorporated in the final report to permit a better assessment of the total scope of the various interaction programs.

4. The Review Board was impressed with the flexibility of the data base system used by PGandE to identify the location of potential interactions. The data base program worked well for this function and information on possible interactions was quickly retrieved. The Review Board was glad to hear that PGandE considered the data base system a valuable management tool to resolve the inconsistencies between the early and later walkdowns. The Review Board recommends that PGandE consider using the data base system for other related engineering requirements in normal design operations, outage management, etc.

5. In the evaluation of the capability of various targets, the Board is aware that standard criteria were utilized. The Board suggests that the appropriate codes, standards, methods of analysis, stress allowables, allowable deflections, etc. be referenced in the final report.

6. The Review Board recognizes your use of consultants during the Systems Interaction Program. The coordination and review of consultant work can be difficult on a large project like this. The Review Board would like to commend PGandE on its effective use of a technical/discipline review by PGandE of all consultant analyses. This undoubtedly will be a useful method to control plant modification interactions and interferences in the future.

In summary, the Review Board believes that PGandE has effectively considered and implemented all recommendations made by us, including those listed above. Thus, there are no unresolved Board comments which require significant action by PGandE. Since the inception of the PGandE Systems Interaction Program, the Board has recognized that the generic issue of "systems interaction" goes well beyond the PGandE scope, i.e., restricting the initiating event to an earthquake. Nonetheless, the Board now believes that the walkdown concept developed by PGandE is a significant first step in any systems interaction program concerned with physical interactions. In light of the miles of piping within any nuclear plant, and the walkdown and analysis techniques proposed by PGandE, the Board weighed heavily upon our knowledge of the inherent conservatism of welded piping systems subjected to seismic loads. Considering the above, the Review Board endorses the intent, objectives, methods of execution and the results of the PGandE Systems Interaction Program. We commend PGandE for their diligent efforts and hereby recommend approval of the report by PGandE management and the NRC.

The Review Board members have been pleased to work with PGandE on this difficult problem. This report now concludes our activity. We would be pleased to provide future assistance at your request.

Very truly yours,

Richard J. Stuart

Richard J. Stuart, Ph.D.
Chairman

on behalf of: Dr. Spence Bush
Mr. Edward Keith
Dr. Robert E. Nickell
Dr. Victor Weingarten

RJS/plh

ATTACHMENT 12

TO THE PGandE

SEISMICALLY INDUCED SYSTEMS INTERACTION PROGRAM

FINAL REPORT

SISIP ZONES: AREA DRAWINGS

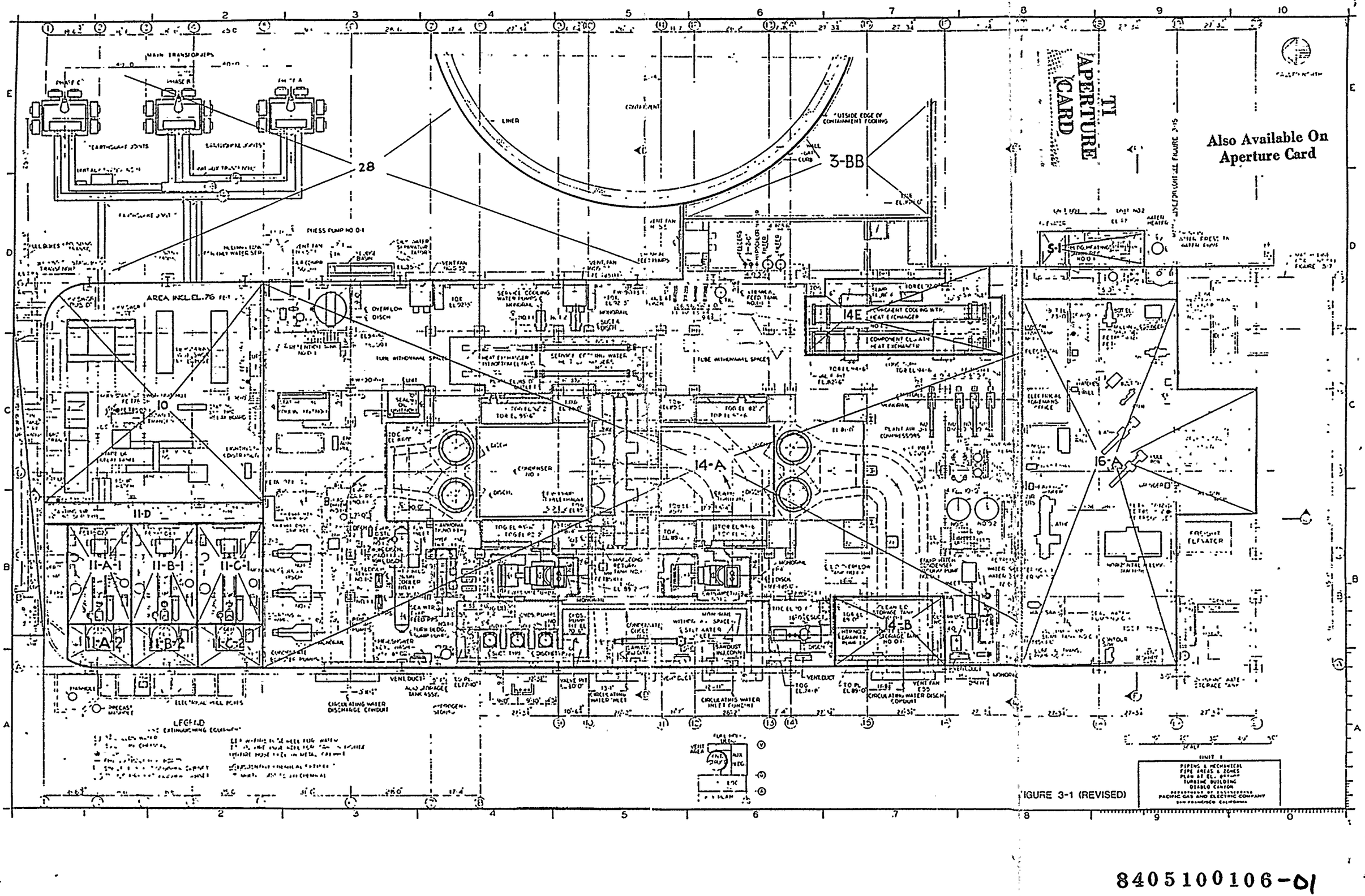


FIGURE 3-1 (REVISED)

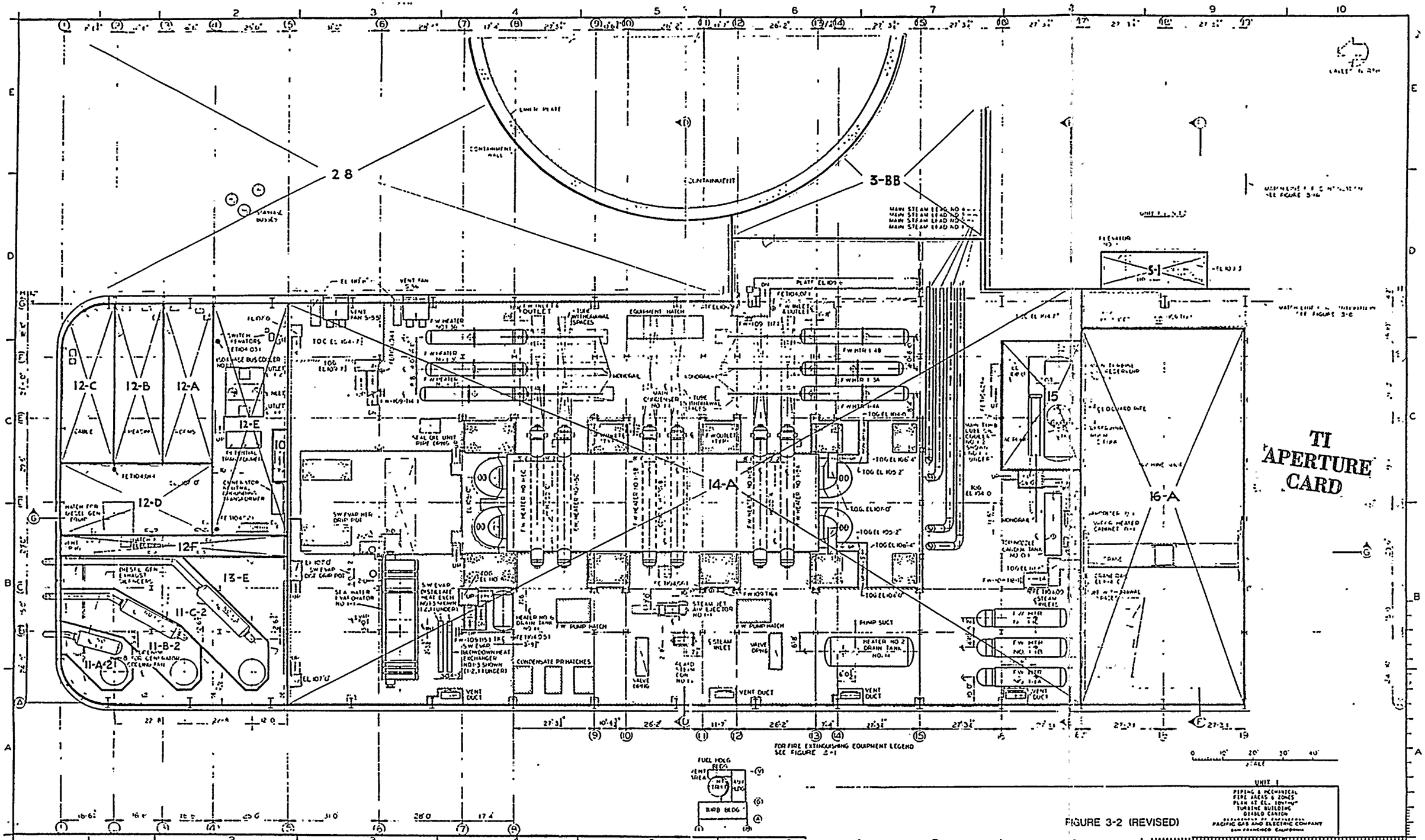


FIGURE 3-2 (REVISED)

Also Available On
Aperture Card

8405100106-07

FIGURE 3-3 (REVISED)

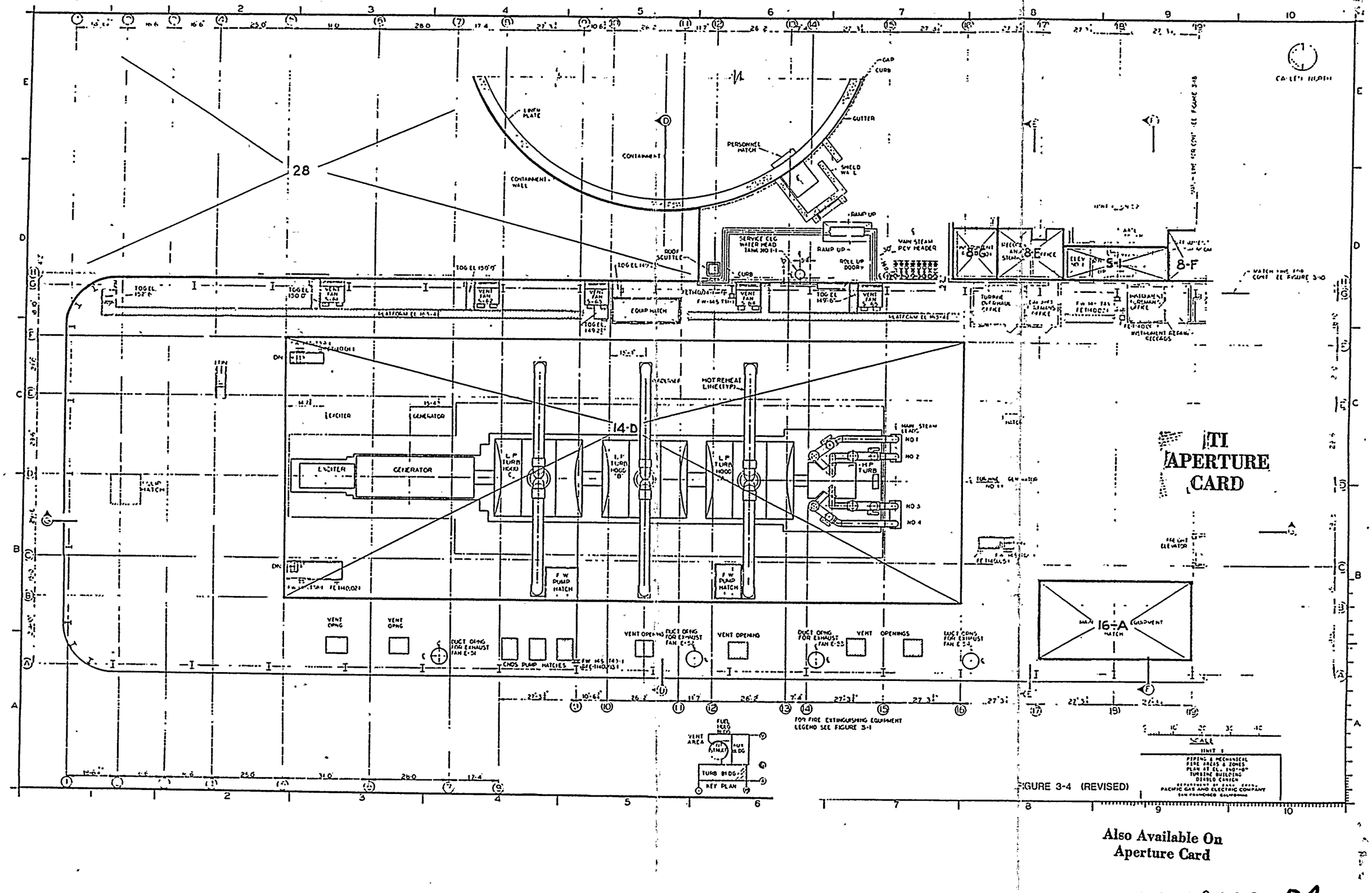


FIGURE 3-4 (REVISED)

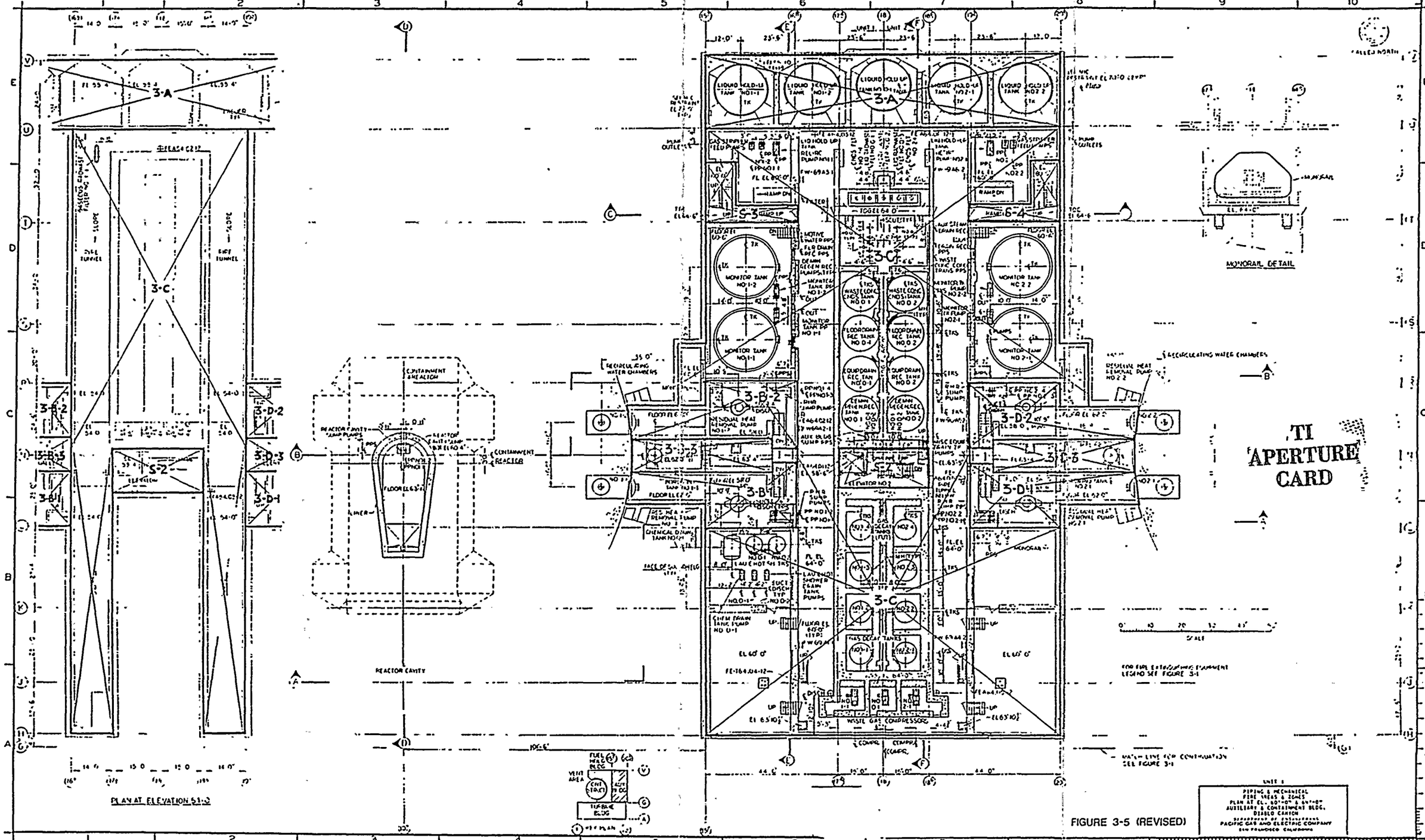


FIGURE 3-5 (REVISED)

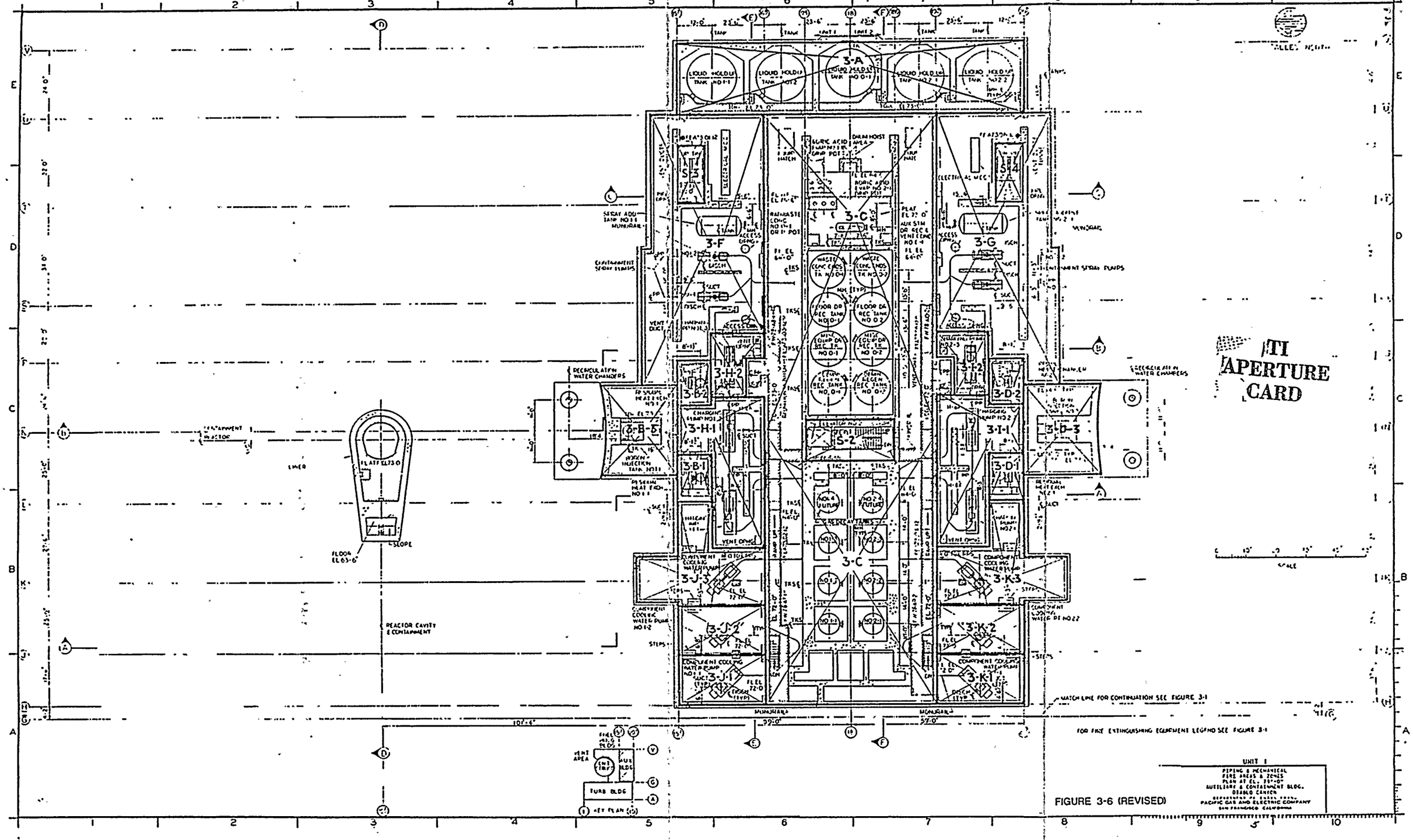


FIGURE 3-6 (REVISED)

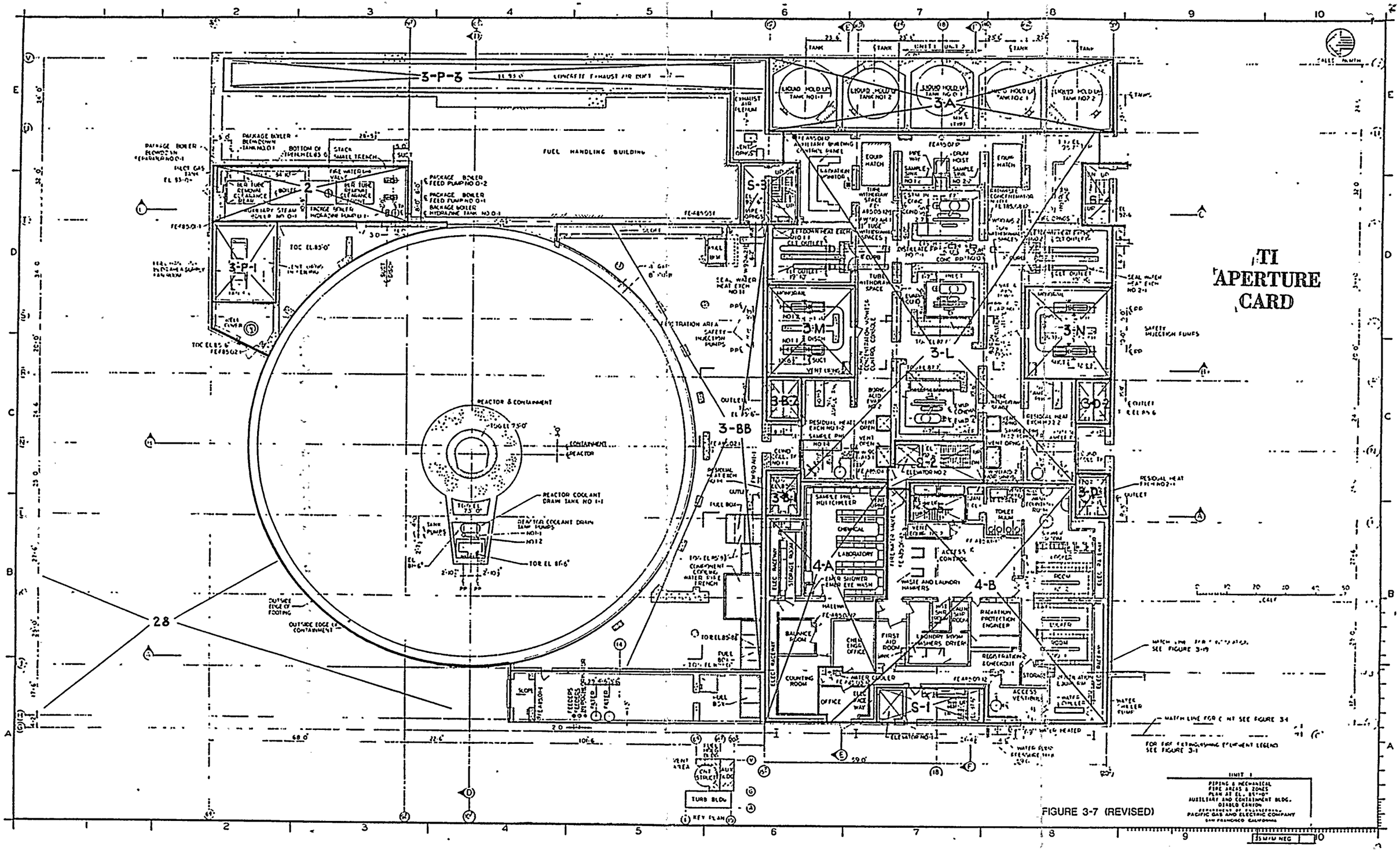


FIGURE 3-7 (REVISED)

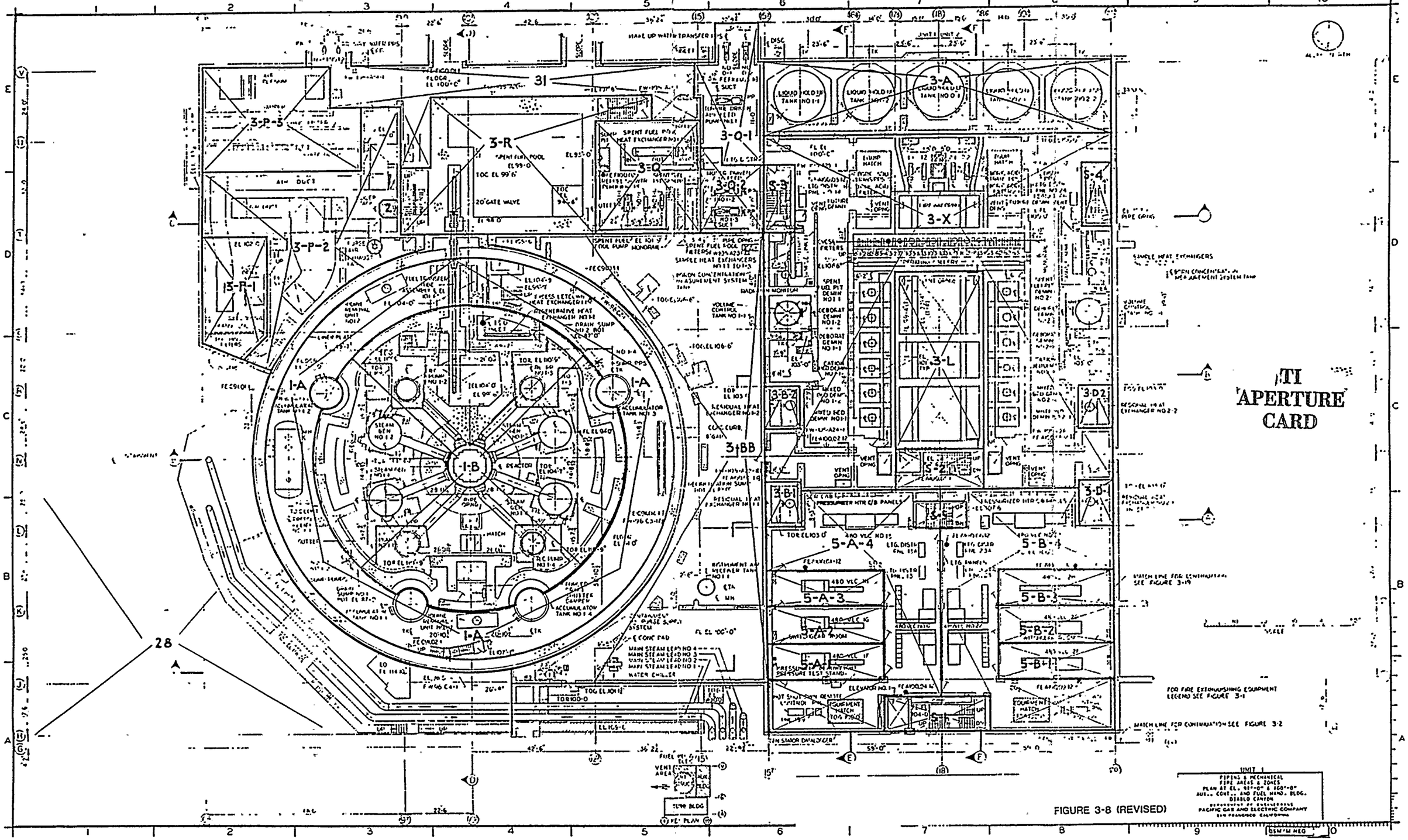
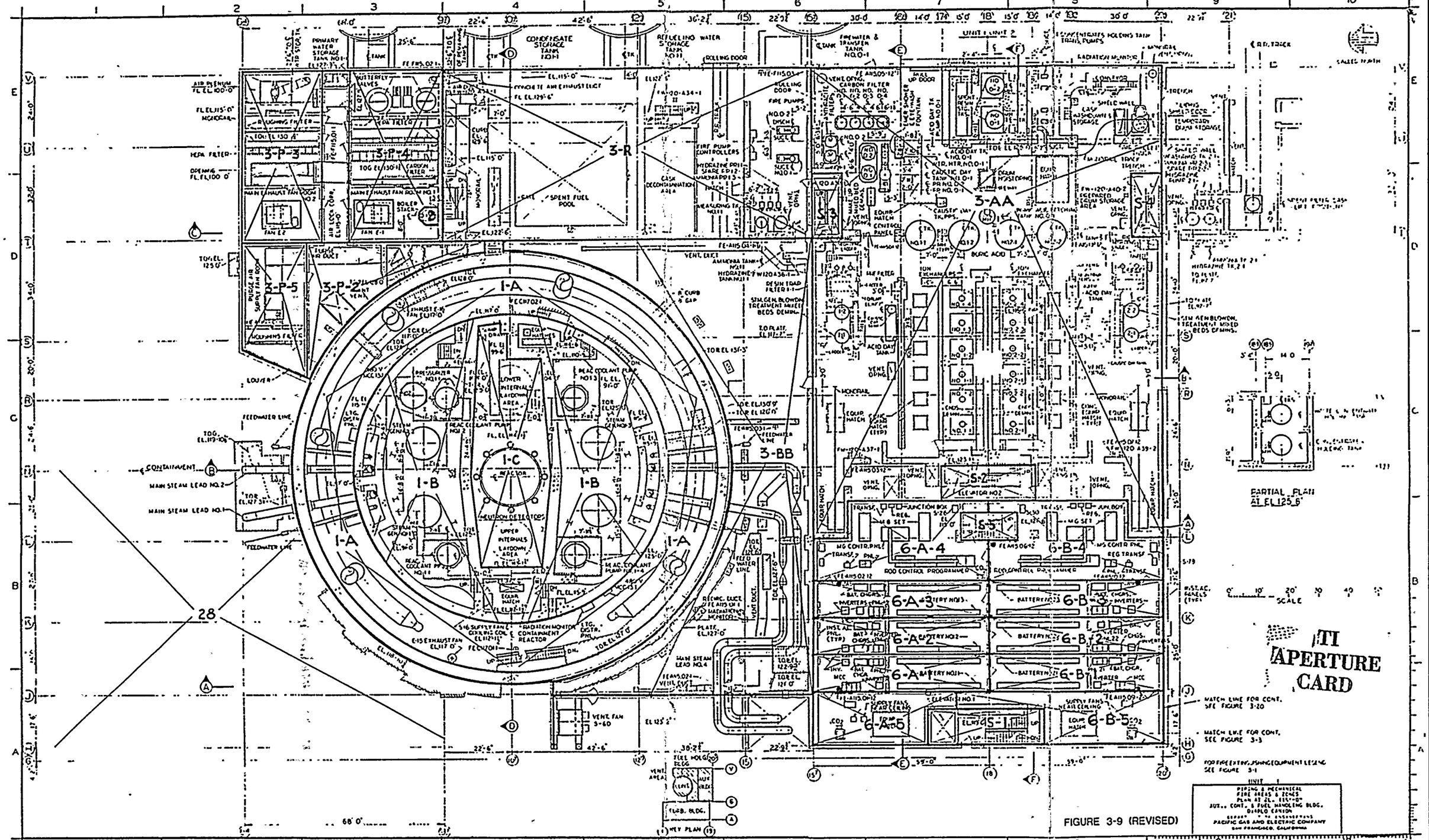


FIGURE 3-8 (REVISED)



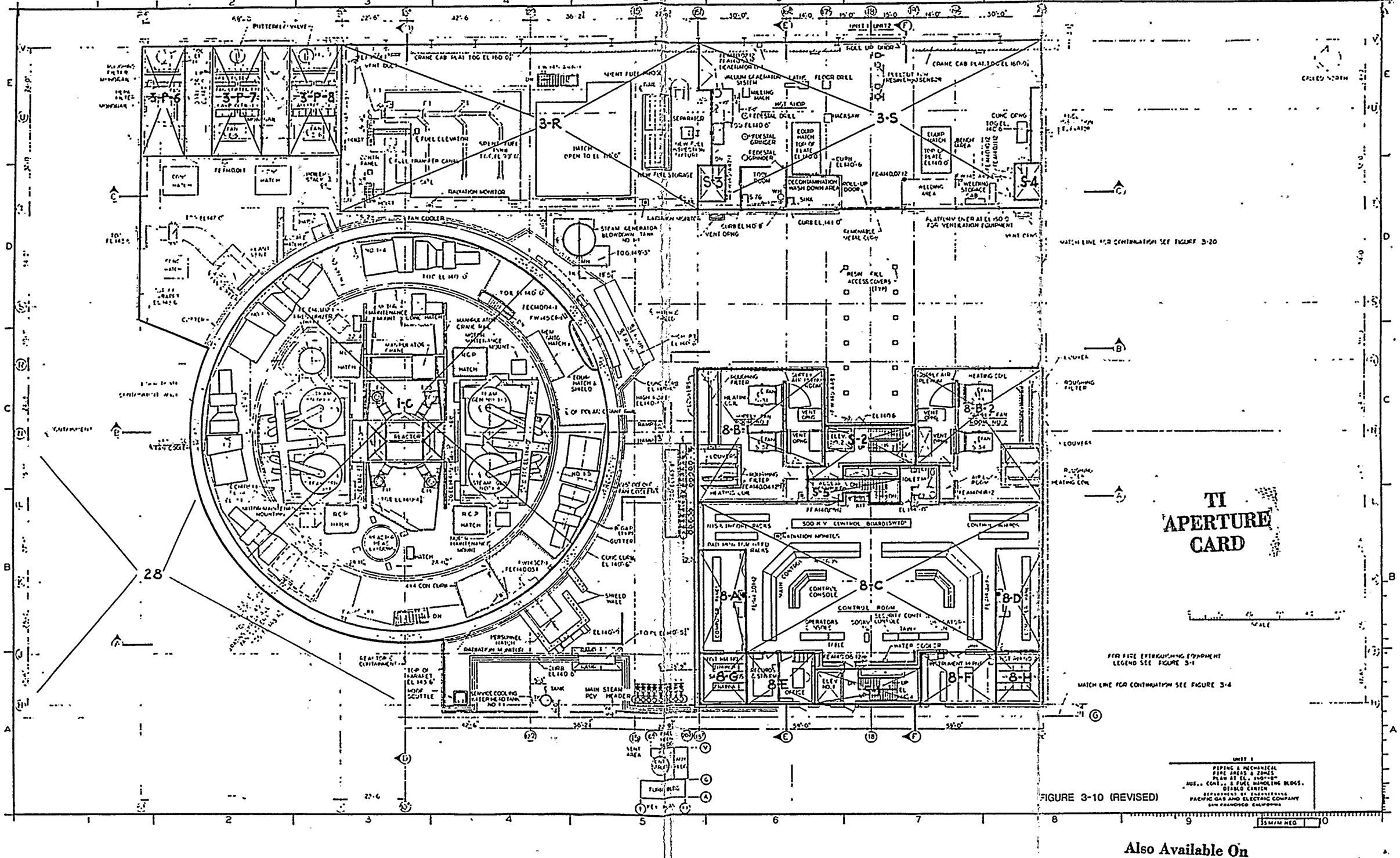
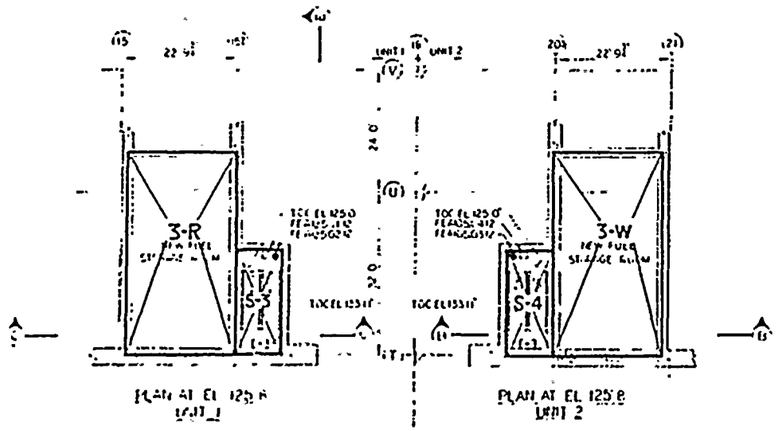


FIGURE 3-10 (REVISED)

TI APERTURE CARD

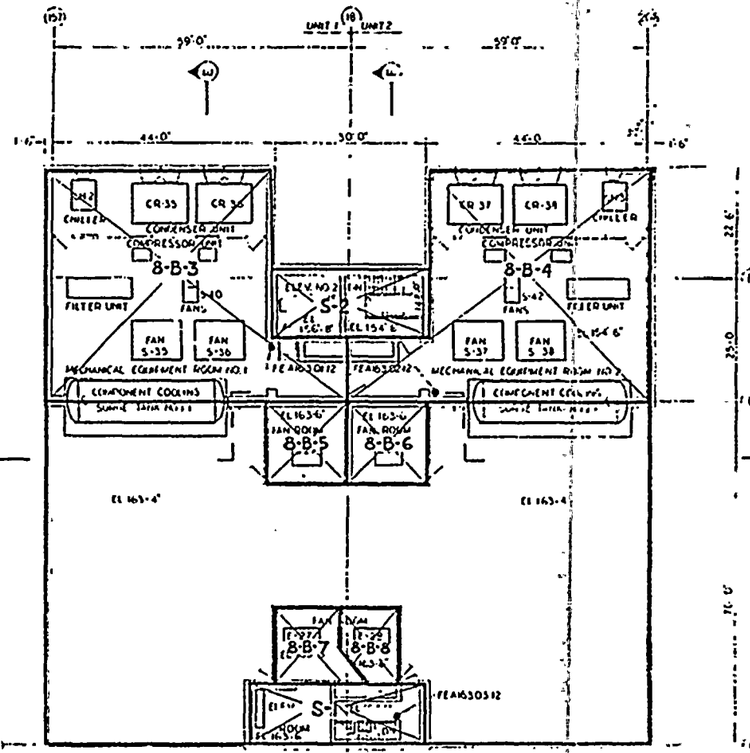
Also Available On Aperture Card

8405100106 -10

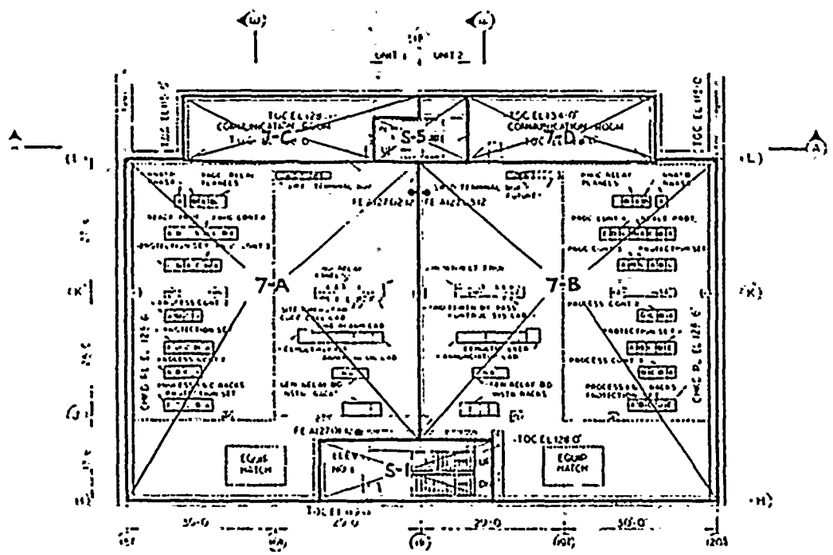


PLAN AT EL 125'6"
UNIT 1

PLAN AT EL 125'6"
UNIT 2



PLAN AT EL 154'6" & 163'-4"



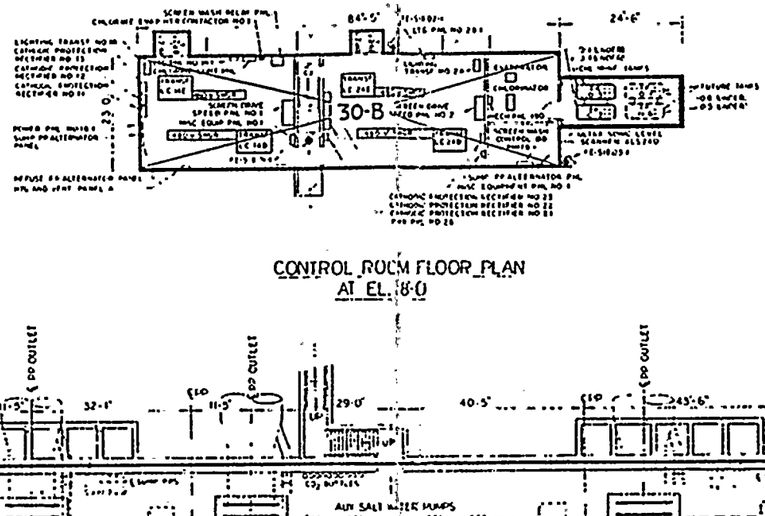
PLAN AT EL 127'-4" CABLE SPREADING ROOM

TI
'APERTURE'
CARD

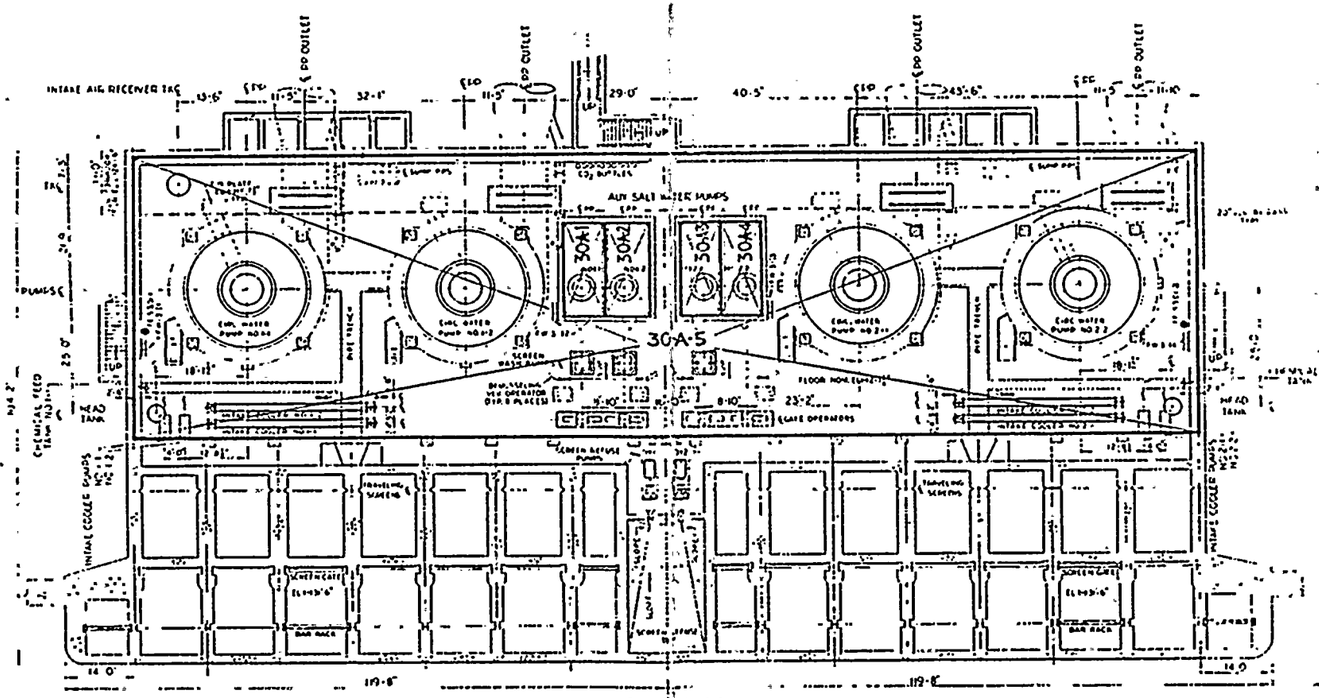
Also Available On
Aperture Card

FIGURE 3-11 (REVISED)

8405100106 -11

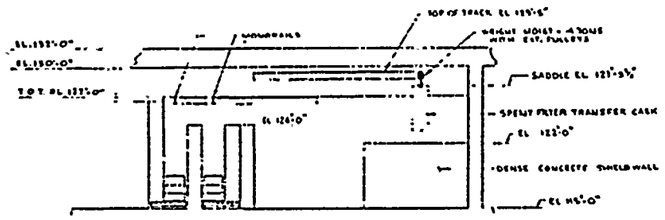


CONTROL ROOM FLOOR PLAN
AT EL. 8'-0



INTAKE STRUCTURE PLAN
AT EL. -12'-0"

FIGURE 3-12 (REVISED)



SECTION A-A

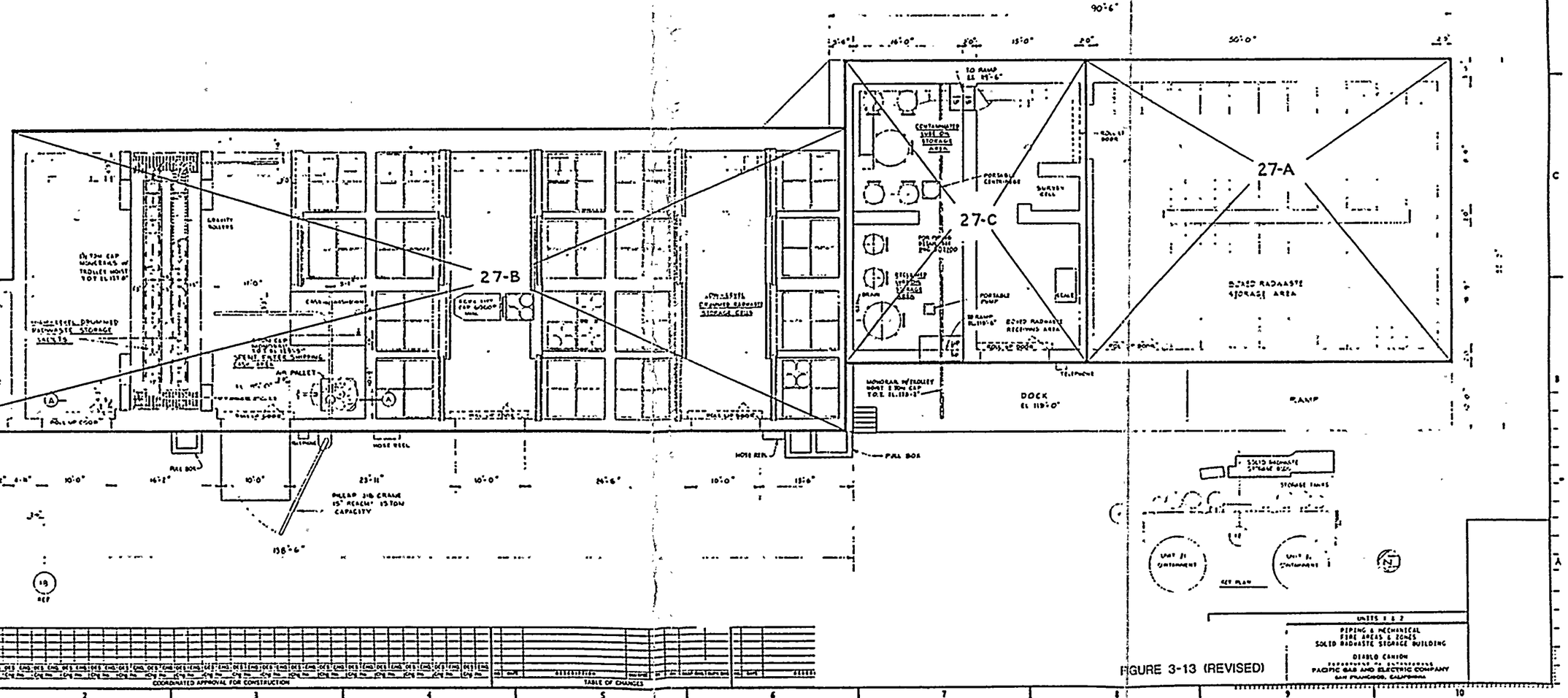


FIGURE 3-13 (REVISED)

1.47

20 21 22 23 24 25 26 27 28 29

VALVE SYMBOLS

PG&E & COMMON (NOTE 7) | TITLE | WESTINGHOUSE

- NON-CONTROLLED (MANUAL) SEE VALVE SPEC. - DWG. 049020 (C-0627-D)
- ADDITIONAL VALVE DESCRIPTION
- SERIES NO.
- PRESSURE RATING
- TYPE
- SIZE (SHOWN ONLY IF DIFF FROM LINE SIZE)
- FOR TUBING VALVE IDENTIFICATION SEE DWG 053479
- VALVE TYPE
- VALVE SIZE (3/4-T56)
- (SPECIFIED ON VALVE REFERENCE GUIDE) DC-663219-30
- ITEM NO. SEE DWG. 102039 (ALTERNATE SPEC)

- MODULATING VALVE
- NORMALLY CLOSED VALVE (ON-OFF)
- NORMALLY OPEN VALVE (ON-OFF)
- THROTTLED VALVE (MANUAL)

Ⓦ USES THE VALVE TYPE DESIGNATION SHOWN BELOW

PG&E USES THE FUNCTIONAL DESIGNATION SHOWN ABOVE

- GATE VALVE
- GATE VALVE (DOUBLE DISC)
- NEEDLE VALVE
- GLOBE VALVE
- BALL VALVE
- DIAPHRAGM VALVE
- BUTTERFLY VALVE
- THREEWAY VALVE NORMALLY CLOSED PORT.
- CHECK VALVE
- CHECK VALVE WITH OPERATOR
- DAMPER
- SEE ABBREVIATION
- AIR OPERATOR
- AIR OPERATOR (WITH POSITIONER)
- INSTRUMENT ACTUATED OPERATOR WITH VALVE POSITIONER
- PROCESS ACTUATED OPERATOR VALVE WITH VALVE POSITIONER
- PROCESS ACTUATED VALVE OPERATOR WITH PILOT (DOWNSTREAM BLEED)
- DOUBLE DISC GATE VALVE WITH THERMAL RELIEF CONNECTION
- ELECTRIC SOLENOID OPERATOR
- ELECTRIC MOTOR OPERATOR
- MANUAL REGULATOR OR SELF CONTAINED REGULATOR
- PRESSURE REDUCING REGULATOR WITH EXTERNAL PRESSURE TAP
- RUPTURE DISC
- RELIEF VALVE (2X3)
- VACUUM BREAKER
- STEM LEAKOFF
- EXTENSION STEM OPERATOR THRU WALL PENETRATION

EQUIPMENT SYMBOLS

PG&E & COMMON (NOTE 7) | TITLE | WESTINGHOUSE

- HEAT EXCHANGER (ANY TYPE)
- HEAT EXCHANGER (ALTERNATE)
- FLOW STRAIGHTENING VANE
- PULSATION DAMPENER
- POSITIVE DISPLACEMENT PUMP
- BLENDER
- CENTRIFUGAL PUMP
- SMALL CANNED MOTOR PUMP
- FAN, BLOWER OR COMPRESSOR
- JOHNSON SCREEN
- MIXER
- EJECTOR, EDUCTOR
- RESTRICTING ORIFICE (RO)
- FLOW PRIMARY ELEMENT (FE)
- STEAM TRAP (SEE DWG. 049063 FOR DETAILS) (TRP)
- FILTER
- STRAINER (NUMBER IS NOT NEEDED FOR START-UP STRAINER) (STR)
- CONICAL STRAINER (FOR START-UP ONLY)
- EXPANSION JOINT
- FLEXIBLE CONNECTION
- FLEXIBLE HOSE
- DISCONNECT COUPLING
- BLIND PIPE END (PLUG OR CAP)
- BLIND FLANGE
- FIRE HOSE CONNECTION
- NOZZLE TERMINAL (SIZE SHOWN ONLY IF DIFF. FROM PIPE) (8")
- MFR. NOZZLE IDENTIFICATION (IF AVAILABLE)
- REDUCER
- FLANGE CONNECTION (PIPING OR EQUIPMENT)
- HEATER (STEAM OR ELECTRICAL)
- LOOP SEAL (TRAP)
- SPRAY NOZZLES (INSIDE VESSEL)
- SPARGER (INSIDE VESSEL)
- SPECTACLE FLANGE
- THERMAL SLEEVE

TI APERTURE CARD

INSTRUMENT SYMBOLS

COMMON (NOTE 7) | TITLE

- INSTRUMENT NO. IDENTIFICATION BALLOON (SEE TABLE BELOW) (PI 16; 22-A04)
- INSTRUMENT SCHEMATIC REFERENCE - USED FOR ALL MULTIPLE DEVICE INSTRUMENT LOOPS
- INSTRUMENT NO. Ⓗ COMPUTER INPUT NO.
- MECHANICAL PANEL NO. (SEE DWG. 101904) (PI 6, 14)
- INST. FUNCTION - SEE LISTING BELOW (USED FOR SINGLE DEVICE INSTRUMENT ONLY) (PS 6, HIA)

DEVELOPMENT OF TAG NO. DESIGNATION (SEE ALSO SPECIAL TAGS)

INSTRUMENT FUNCTION (ATTACHED TO PIPE ONLY)

PROCESS VARIABLE	ABBREVIATION	CONTROL VALVE	INDICATOR	SENSOR OR ELEMENT	SWITCH: BLIND	SWITCH: W/INDICATOR	TEST	TRANSMITTER	CONTROL: BLIND	CONTROL: W/INDICATOR
ANALYSIS	AN	-	ANI	CEL	ANS	-		ANT	-	-
FLOW	F	FCV	FI	FE	FS	FIS	FX	FT	FC	FIC
LEVEL	L	LCV	LI	-	LS	LIS	LX	LT	LC	LIC
NUCLEAR	N	-	NI	NE	-	-	-	-	NC	NIC
PRESSURE	P	PCV	PI	-	PS	PIS	PX	PT	PC	PIC
RADIATION	R	RCV	RI	RE	RS	RIS	RX	RT	RC	RIC
TEMPERATURE	T	TCV	TI●	TE○	TS	TIS	TX	TT	TC	TIC
POSITION	PO	PO▲	POI	-	POS	-	-	POT	-	-
MISC. (VIBRATION SW. SPEED CONTROL, ETC.)	Y	YCV	YI	YE	YS	YIS	YX	YT	YC	YIC

▲ POSITIONER
● TI - USED FOR THERMOCOUPLE ELEMENT ALSO
○ TE - USED FOR RTD ELEMENT ONLY

INST. FUNCTION LEGEND

- APS - AUTOMATIC PUMP START/STOP
- HIA - HIGH ALARM
- LOA - LOW ALARM
- INT - INTERLOCK
- TST - TEST
- HLA - HIGH/LOW ALARM

SPECIAL TAG:

- RV - RELIEF VALVE
- SC - SAMPLE COOLER
- SV - SOLENOID VALVE
- STR - STRAINER
- TRP - TRAP
- HCV - HAND CONTROL VALVE
- RTD - RESISTANCE TEMPERATURE DETECTOR.

LINE CODING

COMMON (NOTE 7) | TITLE

(S2 | 36 | 4111)
- INSULATION SPECIFICATION (101905)
- LINE SIZE (INCHES)
- LINE NO. (OMITTED FOR <2-1/2" SHORT RUN)
- PIPING SPECIFICATION (049021)

S2-36-4111 ALTERNATE

- INSULATING FLANGE
- MAIN FLOW LINES
- SECONDARY FLOW LINES
- INSTRUMENT LINES (PROCESS)
- MAIN HEADER (AIR)

Also Available On Aperture Card

- BELLOWS SENSOR FILLED SEALED SYSTEM (CAPILLARY)
- INDICATES CHANGE OF LINE SPEC. SIZE OR NO. AND EQUIP. BOUNDARY
- PIPE PENETRATION NO. (INSIDE CONTAINMENT | OUTSIDE CONTAINMENT)
- CHANGE OF PIPING SPEC.
- SHIELD WALL PENETRATION (INSIDE | OUTSIDE)
- CHANGE OF PG&E CLASS
- HEAT TRACING AND BOUNDARY

PG&E CODE CLASS	APPLICABLE CODES	SEISMIC DESIGN CLASS
A	DESIGN - B31.1 FABRICATION, ERECTION, NDE - B31.7 CLASS I	I
B	DESIGN, FABRICATION, ERECTION, NDE - B31.7 CLASS II	I
C	DESIGN, FABRICATION, ERECTION, NDE - B31.7 CLASS III	I
E	DESIGN, FABRICATION, ERECTION, NDE - B31.1	II
G	NFPA; ALSO COMPLIES WITH B31.1●	I
GI	NFPA STANDARDS●	II

● 10CFR50 APPENDIX B/OR ALTERNATE QUALITY ASSURANCE PROGRAM APPLICABLE TO THESE CODE CLASSES. REFER TO PG&E SPECIFICATION 8707 AND 8711 TO DETERMINE THE PIPING CODES AND STANDARDS APPLICABLE TO A PARTICULAR PG&E CODE CLASS, NOT LISTED ABOVE.

VENT, DRAIN, TELL TALE SYSTEM IDENTIFICATION

- TEST VENT
- VENT
- VENT (EQUIPMENT)
- (SEE DWG. 049066 FOR V.D&TT VALVE DETAILS. ALL OTHER VALVES TO BE IDENTIFIED.)
- DRAIN FUNNEL
- DRAIN
- TEST CONN.
- TELL TALE

(TV, V, V, TT, TC, D, D)

REFERENCE BLOCK — COMMON (NOTE 7)

(42-D | 02)
- PIPING OR INSTR. SCHEM. "FLAG"
- DWG. NO. (LAST TWO DIGITS) NO. OMITTED FOR THE SAME DWG.
- DWG. COORDINATE (SIDE)
- DWG. COORDINATE (TOP)

◀42-D-02▶ ALTERNATE

ABBREVIATION & DESCRIPTION

NFPA	NATIONAL FIRE PROTECTION ASSOCIATION
RWST	REFUELING WATER STORAGE TANK
SRST	SPENT RESIN STORAGE TANK
PRT	PRESSURIZER RELIEF TANK
PRL	PRESSURE RELIEF LINE
ATM	ATMOSPHERE
PW	PRIMARY WATER
FAI	FAIL AS IS
FC	FAIL CLOSE
FO	FAIL OPEN
SC	SEALED CLOSE } WIRED & LEAD SEALED
SO	SEALED OPEN } WIRED & LEAD SEALED
DH	DRAIN HEADER
GA	GAS ANALYSER
HT	HOLD-UP TANK (LIQUID)
NO	NORMALLY OPEN
NC	NORMALLY CLOSE
ECC	EMERGENCY COOLING CONNECTION
VH	VENT HEADER
DW	DEMINERALIZED WATER
D	LOCAL DRAIN
V	VENT TO ATMOSPHERE
N_2	NITROGEN
H_2	HYDROGEN
T	CONTAINMENT ISOLATION SIGNAL (PHASE A)
S	SAFETY INJECTION SIGNAL
P	CONTAINMENT SPRAY SIGNAL & CONTAINMENT ISOLATION SIGNAL (PHASE B)
RCDT	REACTOR COOLANT DRAIN TANK
IMB	INSIDE MISSILE BARRIER
OMB	OUTSIDE MISSILE BARRIER
RR	REACH ROD
PC	INDICATE PG&E SCOPE WITH A Ⓦ SYSTEM
WM	WALL MOUNTED
Ⓦ	WESTINGHOUSE ELECTRIC CO.
✱	SUPPLIED WITH ASSOCIATED EQUIPMENT.

TARGET SCHEMATICS LEGEND

- (solid) SYSTEMS REQUIRED FOR INTERACTION STUDY. (SOLID BLACK)
- (hatched) SYSTEMS NOT REQUIRED FOR INTERACTION STUDY (GRAY).
- (O) DEVICE SHALL BE CAPABLE OF COMPLETE OPERATION ON COMMAND: I.E. START/STOP PUMPS, OPEN/CLOSE VALVES.
- (F) DEVICE SHALL ATTAIN & MAINTAIN FAIL-SAFE POSITION W/O OPERATOR ACTION (VALVES ONLY).
- (I) DEVICE SHALL, AS A MINIMUM, MAINTAIN ITS PRESSURE BOUNDARY INTEGRITY.
- ••••• FIRE ZONE AREA BOUNDARY

GENERAL NOTES:

1. FOR UNIT LINE NO. SEE LINE DESIGNATION (102040)
2. SEE INDIVIDUAL SCHEMATIC FOR SPECIAL SYMBOLS NOT SHOWN ON THIS LEGEND.
3. ON VENTS AND DRAINS WHERE A DOUBLE BARRIER IS REQUIRED REFER TO DWG 049066 NOTE 4
4. DC-663211-16' DENOTES UNIT 1&2
   DC-663211-(17) DENOTES UNIT 1
   DC-663211-[18] DENOTES UNIT 2
   — SHEET NUMBER
   — RECORD NUMBER
5. ALL VALVES SHOWN TO HAVE LEAKOFF CONNECTIONS SHALL BE PERMANENTLY PIPED TO THE APPROPRIATE DRAIN POINT. ALL OTHER VALVES WITH LEAKOFF WILL HAVE LEAKOFF CONNECTIONS CAPPED.
6. SUPPLIED WITH ASSOCIATED EQUIPMENT. (SEE PIPING SCHEMATIC FOR SPECIFIC INFO.)
   INDICATES PIPE NOT SUPPLIED BY KELLOGG (8711) OR SCOTT (8831) (SEE PIPING SCHEMATIC FOR SPECIFIC INFORMATION)
7. COMMON - INDICATES THAT SAME SYMBOL IS USED FOR Ⓦ OR PG&E. (30-E)
8. Ⓦ SYMBOLS USED ON THIS SHEET EXTRACTED FROM DC-663200-10
9. EQUIPMENT NUMBERING:
   0-1 - FOR UNITS 1 & 2 (COMMON)
   (1-1) - FOR UNIT 1 ONLY
   [2-1] - FOR UNIT 2 ONLY
   — EQUIPMENT NUMBER
   — UNIT NUMBER
   TO INCLOSE VALVE SPEC, VENT OR DRAIN SYMBOLS.
   USE ( ) FOR UNIT 1 ONLY
   USE [ ] FOR UNIT 2 ONLY

REF. DWG 102001 SH.3

P.G.&E. CO.	DRAWING NO.	CHANGE
SHEET 2 OF SHEETS	107195	1
106701 KLV.1 SH.2		
102001 REV.5 SH.3		

35 N NEG

INDEX

8405100106-15

107195

SYSTEM INTERACTION PROGRAM SCHEMATIC 107195

SHEET NO.	DRAWING DESCRIPTION	ZONE (SEE NOTE 1)	SIP SYSTEM NO. DESIGNATION	REFERENCE PIPING SCHEMATIC (SEE NOTE 2): DESCRIPTION	DRAWING NO.	SHEET NO.
1	TITLE, CONTENTS, REF. DWG.					
2	LEGEND			LEGEND	102001	3
3	AUX. FEEDWATER SYS & F.W. TIE	1-A,1-C,3-BB,3-Q-1 3-Q-2,28,31	01, 02	FEEDWATER SYSTEM	102003	4
4	STEAM GEN 3 & 4, MAIN STEAM LEADS, STM. GEN. BLOWDOWN REACTOR COOLANT	1-A,1-B,1-C,3-BB	02, 03, 04			3
5	STEAM GEN 1 & 2, MAIN STEAM LEADS, STM. GEN. BLOWDOWN REACTOR COOLANT	1-A,1-B,1-C,3BB 3-G-1,3-G-2,28	02, 03, 04	TURBINE STEAM SUPPLY SYSTEM	102004	5
6	STEAM GEN BLOWDOWN & SAMPLING SYS	1-A,1-B,3-BB	05	(PB & CI INTEGRITY ONLY)		7
7	AUX STM PIPE CONT. ISOLATION	1-A,3-BB	26	AUXILIARY STEAM SYSTEM (CONT. ISOLATION ONLY)	102006	4
8	REACTOR COOLANT LOOPS	1-A,1-B	06,08,12,15,17,18,19			3
9	PRESSURIZER	1-A,1-B,1-C,3-BB	07,08,09,12,19	REACTOR COOLANT SYSTEM	102007	4
10	REACTOR COOLANT LOOPS RTD MANIFOLD	1-A,1-B	06			5
11	REACTOR VESSEL LEVEL INSTR. & VENT SYS	1-A,1-B,1-C,3-BB	06	(RCS PB INTEGRITY ONLY)		7
12	REACTOR COOLANT PUMPS SEAL WATER	1-A,1-B,3-BB,3-X	10, 12			3
13	REGENERATION HEAT EXCHANGER & ITS CONTROL VALVES	1-A,1-B,3-BB	12			4
14	VOLUME CONTROL TANK & CHARGING PUMPS SYS	1-A&B,3-B-1,2&3, 3-H-1&2,3-L,3-X 3-BB	09,10,11,12,13, 14,15,16,17	CHEMICAL & VOLUME CONTROL SYSTEM	102008	4B
15	BORIC ACID TANKS AND PUMPS	3-M,3-X	13, 17			5B
16	CENTRIFUGAL CHARGING PUMP AUXILIARIES	3-H-1	11			8
17	ACCUMULATOR DISCHARGE PIPING & TEST LINES	1-A,1-B,3-BB	15	(RCS PB & CI INTEGRITY ONLY)		3
18	BORON INJECTION & REFUELING WATER TANK OUTLETS	1-A&B,3-B-2&3,3-F 3-H-1,3-L,3-M,3-O, 3-Q-1&2,3-X,3-BB,31	15, 16, 17, 18	SAFETY INJECTION SYSTEM	102009	4
19	SAFETY INJECTION PUMP DISCHARGE & RHR TIE	1-A&B,3-B-1&2,3-M, 3-BB	09, 15, 16, 18			5
20	RESIDUAL HEAT REMOVAL PUMPS & HEAT EXCHANGERS PIPING	1-A&B,3-B-1,2&3 3-F,3-BB	15, 16, 18, 19	RESIDUAL HEAT REMOVAL SYSTEM	102010	3
21	NUCLEAR STEAM SUPPLY SYSTEM SAMPLING	1-A,1-B,1-C,3-B-1, 3-B-2,3-H-1,3-X 3-BB	19	NUCLEAR STEAM SUPPLY SAMPLING SYSTEM (RCS PB & CI INTEGRITY ONLY)	102011	2
22	CONTAINMENT SPRAY	1-A,1-C,3-F,3-L 3-BB	09, 23	CONTAINMENT SPRAY SYSTEM	102012	3
23	SPENT FUEL PIT MAKE UP WATER & RWST RECIRC TIE	3-O,3-R	16, 27	SPENT FUEL PIT COOLING SYSTEM	102013	2
24	COMPONENT COOLING WATER PUMPS, HEAT EXCHANGER, SURGE TANK	3-J-1, 3-J-2, 3-J-3, 8-B-1, 8-C, 14-A, 14-E, 3-BB	20	COMPONENT COOLING WATER SYSTEM	102014	5
25	COMPONENT COOLING WATER PUMPS' LUBE OIL SYSTEM		20	LUBE OIL DISTRIBUTION & PURIFICATION SYSTEM	102020	8
26	CCW SUPPLY & RETURN FOR CCW PUMPS SEAL WATER & OIL COOLERS	3-J-1, 3-J-2, 3-J-3, 3-BB	20			5A
27	CCW SUPPLY & RETURN FOR RHR, CCP, SIS, RCFC COOLERS	1-A, 1-C, 3-B-1, 3-B-2, 3-H-1, 3-X, 3-BB	20			6
28	CCW SUPPLY & RETURN FOR GWS COMP, CENTRAL SAMPLE PANEL, RCP COOLERS	3-C, 3-H-1, 3-J-3, 3-L, 3-X, 3-BB	20			6A
29	CCW FOR RCP & REACT. VESSEL SUPPORT COOLERS	1-A, 1-B, 3-BB	20	COMPONENT COOLING WATER	102014	7
30	CCW FOR B.A. EVAP. AUX. STM RCVR VENT, WASTE CONC., NSSS SAMPLE COOLERS	3-C, 3-L, 3-X, 3-BB	20			8
31	CCW COOLERS FOR SEAL WATER, LETDOWN, S.G. BLDWN. SAMP., SPENT FUEL PIT, EXCESS LETDOWN	1-A, 3-L, 3-O, 3-BB	20			9
32	CCW SUP & RET FOR CCP-1, RHX-1, RHR PP SEAL COOLER, SIS PP, RCFC-1, 2	1-A, 1-C, 3-B-1, 3-M, 3-B-3, 3-X, 3-BB	20			10
33	CCW TO WASTE GAS COMPRESSORS	3-C	20	GASEOUS RADWASTE SYSTEM	102024	3
34	CONDENSATE TANK	3-R, 31	01, 21	MAKE-UP WATER	102016	7

NOTES:
1. ONLY UNIT 1 ZONES ARE DESIGNATED ON SHEETS 1 & 3 THROUGH 61. THE EQUIVALENT UNIT 2 ZONES MAY BE DETERMINED BY USING SHEET 62.
2. THE COMPARABLE UNIT 2 PIPING SCHEMATICS ARE DRAWING NUMBERS 108001 THROUGH 108025.

ABBREVIATIONS:
RCS = REACTOR COOLANT SYSTEM
PB = PRESSURE BOUNDARY
CI = CONTAINMENT ISOLATION.

SYSTEM INTERACTION PROGRAM SCHEMATIC 107195

SHEET NO.	DRAWING DESCRIPTION	ZONE (SEE NOTE 1)	SIP SYSTEM NO. DESIGNATION	REFERENCE PIPING SCHEMATIC (SEE NOTE 2): DESCRIPTION	DRAWING NO.	SHEET NO.
35	PRIMARY WATER SUPPLY TO CCW SURGE TANK	3-Q-1,3-BB	21	MAKE UP WATER SYSTEM	102016	8
36	AUX SALTWATER PUMPS & HEAT EXCHANGER	14-A&E,30-A-1,2&5	22	SALTWATER SYSTEM	102017	3
37	FIREWATER YARD SUPPLY TO PLANT	3-Q-1,3-T-1,14-A, SOLID RADWASTE FACILITY & SECURITY BUILDING	28			2
38	FIREWATER PUMPS & HOSEREELS IN FUEL HANDLING BLDG.	3-P-2,3-Q-1,3-R & OUTSIDE 3-R-31	28	FIRE PROTECTION SYSTEM	102018	3
39	FIREWATER HOSEREELS IN TURBINE BLDG.	11-D,12-C,13-E, 14A, D&E, 16-A, OUTSIDE 14-D & 16-A	28			4
40	FIREWATER HOSEREELS IN AUXILIARY BLDG.	3-C,3-L,3-S,3-T-1, 3-V-2&4,3-W,3-X,32, 3-AA,3-BB,3-CC,S-2	28			5
41	FIREWATER SUPPLY, HOSEREELS, RCP RING IN CONTAINMENT BLDG.	1-A,1-B,1-C,3-BB	28			7
42	CONTAINMENT ISOLATION OF LIQUID DRAINS PIPING PENETRATION	1-A,3-BB	27, 29	LIQUID RADWASTE SYSTEM (CI ONLY)	102019	3
43	DIESEL FUEL OIL SUPPLY SYSTEM	11-A-1&2,11-B-1&2 11-C-1&2,22-A-1&2 22-B-1&2,OUTSIDE OF 11-A,B&C-2	24			2
44	DIESEL STARTING AIR SYSTEM	11-A,B&C-1	24			3
45	DIESEL TURBO CHARGER AIR ASSIST SYSTEM	11-A,B&C-1	24			4
46	DIESEL COMBUSTION AIR & EXHAUST SYSTEM	11-A,B&C-1,13-E 11-A,B&C-2	24			5
47	DIESEL ENGINE FUEL OIL DAY TANK, PUMPS & FILTERS	11-A,B&C-1	24	DIESEL ENGINE-GEN. SYSTEMS	102021	6
48	DIESEL LUBE OIL SYSTEM	11-A,B&C-1	24			7
49	DIESEL ENGINE JACKET WATER COOLING SYSTEM	11-A,B&C-1	24			8
50	DIESEL ENGINE MISC. INSTRUMENTS	11-A,B&C-1	24			9
51	CONTAINMENT, FUEL HANDLING, AUXILIARY BLDG. FANS	1-A,3-O,3-P-1→8, 3-Q-1&2,3-R,3-S,3-BB	25			3
52	AUXILIARY BLDG VENTILATION DUCTS & SUPPLY FAN	3-B-1,2&3,3-C,3-F 3-H-1&2,3-J-1→3, 3-L,3-M,3-R,3-X, 8-B-1,3-AA,3-P-3	25			4
53	CONTAINMENT HYDROGEN PURGE PIPING THRU CONT. ISOLATION	1-A,3-BB	25	(CI ONLY)		4A
54	CONTROL ROOM VENTILATION	8-A,8-B-3,8-C,8-E	25	VENTILATION AND AIR CONDITIONING SYS.	102023	5
55	POST LOCA SAMPLE TUBING THRU CONTAINMENT ISOLATION	1-A,3-BB	25	(CI ONLY)		11
56	HYDROGEN MONITOR TUBING THROUGH CONTAINMENT ISOLATION	1-A,3-BB	25	(CI ONLY)		13
57	VENTILATION OF INVERTER & 480-V SW-GR ROOMS (AUX BLDG)	5-A-1→3,6-A-1→3, 6-A-5	25			14
58	VENTILATION OF 4-KV VITAL BUS SW. GEAR & CABLE SPREADING ROOM	12-A,B&C,13-A→E	25			15
59	VENTILATION OF AUX SALTWATER PUMP ROOM	30-A-1,30-A-2	25			16
60	VENTILATION OF DIESEL ENG ROOM & FAN COOLED RADIATOR	11-A-1&2,11-B-1&2 11-C-1&2,ABOVE 11-A-2,11-B-2,11-C-2	25			17
61	COMPRESSED AIR THRU CONTAINMENT ISOLATION	1-A,3-BB	31	COMPRESSED AIR SYSTEM (CI ONLY)	102025	4
62	FIRE ZONE KEYED LOCATION SUMMARY	ALL	—	(NOT APPLICABLE)	—	—

Also Available On Aperture Card

PROJECT SCOPE:
1. THE SYSTEMS INTERACTION PROGRAM SCHEMATICS ILLUSTRATE THE BOUNDARIES OF THE TARGET SYSTEMS AND THE OPERABILITY REQUIREMENTS OF THE COMPONENTS OF THOSE SYSTEMS. THESE SCHEMATICS ARE INCLUDED FOR THE PURPOSE OF ILLUSTRATING THE SCOPE OF THE PROGRAM AS OF THE DATE OF ISSUANCE, AND AS A GUIDE FOR PLANT WALKDOWNS.
2. UNLESS MAJOR CHANGES TO THE SIP SCOPE OR MAJOR CHANGES TO TARGET SYSTEMS OCCUR, THESE DRAWINGS DO NOT REQUIRE REVISION.
3. THESE SCHEMATICS REPRESENT AN ENVELOPE OF TARGET FUNCTIONS AND SHOULD NOT BE CONSTRUED AS OVERRIDING ANY PLANT DESIGN DOCUMENTS.

TI APERTURE CARD

REGISTERED PROFESSIONAL ENGINEER JAMES V. ROCCA No. 12932 MECHANICAL STATE OF CALIFORNIA

COAST VALLEYS DIVISION

NO.	DATE	DESCRIPTION	GM/SPEC	DWN.	CHKD.	SUPV.	APVD. BY
1	3-16-84	APVD. SCHEM. FOR SYS. INTERACTION					

REVISIONS

UNIT 1 & 2

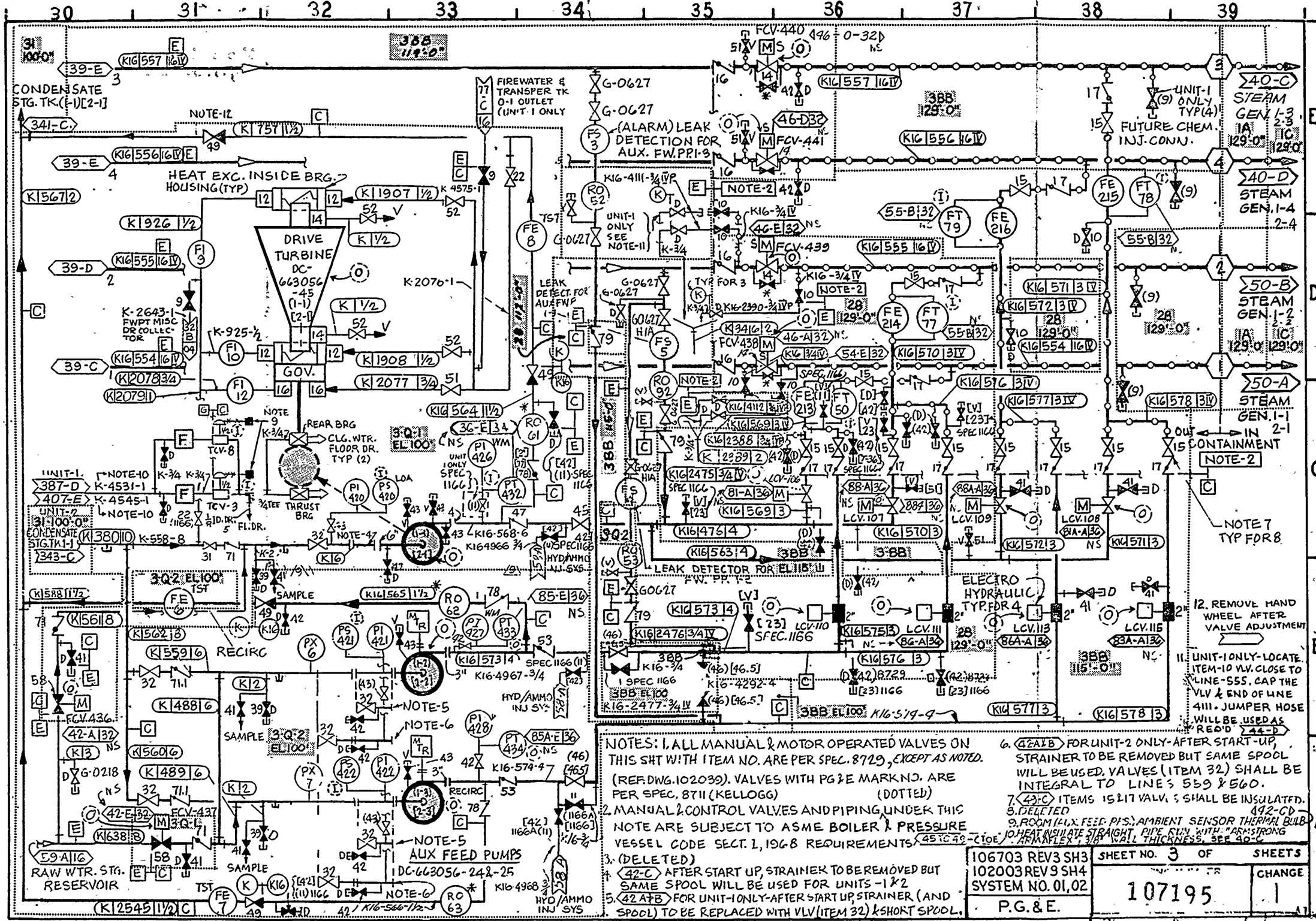
GM 167027/169372
SUPV. / DSGN. / DWN. / CHKD. / O.K. TDO EPH
DATE 3-5-84
SCALES NONE

SYSTEM INTERACTION PROGRAM
TARGET SCHEMATICS
DIABLO CANYON
DEPARTMENT OF ENGINEERING
PACIFIC GAS AND ELECTRIC COMPANY
SAN FRANCISCO, CALIFORNIA

MICROFILM
BILL OF MATL
DWG LIST
SUPSDS
SUPSD BY
SHEET NO. 1 OF 62 SHEETS
107195 REV. 1

RM INDEXED REV. 1

8405100106-14



NOTES: 1. ALL MANUAL & MOTOR OPERATED VALVES ON THIS SHT WITH ITEM NO. ARE PER SPEC. 8729, EXCEPT AS NOTED. (REF. DWG. 102039). VALVES WITH PG&E MARK NO. ARE PER SPEC. 8711 (KELLOGG) (DOTTED)

2. MANUAL & CONTROL VALVES AND PIPING UNDER THIS NOTE ARE SUBJECT TO ASME BOILER & PRESSURE VESSEL CODE SECT. 1, 1968 REQUIREMENTS 45 TO 49-C TOE

3. (DELETED)

4. 42-C AFTER START UP, STRAINER TO BE REMOVED BUT SAME SPOOL WILL BE USED FOR UNITS -1 & 2

5. 42 A&B FOR UNIT-1 ONLY-AFTER START UP, STRAINER (AND SPOOL) TO BE REPLACED WITH VLV (ITEM 32) & SHORT SPOOL.

6. 42 A&B FOR UNIT-2 ONLY-AFTER START-UP, STRAINER TO BE REMOVED BUT SAME SPOOL WILL BE USED. VALVES (ITEM 32) SHALL BE INTEGRAL TO LINES 559 & 560.

7. 43-C ITEMS 15 & 17 VALVES SHALL BE INSULATED.

8. DELETED

9. ROOM (AUX. FEED PPS.) AMBIENT SENSOR THERMAL BULB & HEAT INSULATE STRAIGHT PIPE RUN WITH "ARMSTRONG ARMAFLEX", 3/8" WALL THICKNESS. SEE 49-C 492-CD

11. UNIT-1 ONLY-LOCATE ITEM-10 VLV. CLOSE TO LINE-555. CAP THE VLV & END OF LINE 4111. JUMPER HOSE WILL BE USED AS REQ'D 44-D

12. REMOVE HAND WHEEL AFTER VALVE ADJUSTMENT

106703 REV 3 SH 3 102003 REV 9 SH 4 SYSTEM NO. 01, 02 P.G.& E.	SHEET NO. 3 OF SHEETS DRAWING NO. 107195	CHANGE 1

TI APERTURE CARD

Also Available On Aperture Card

8405100106 -16

40 41 42 43

REACTOR CONTAINMENT INSIDE OUTSIDE

ROOF AREA ABOVE 3BB

10% STM. DUMP TO ATM. (OUTSIDE BLDG)

3BB EL. 115

1C EL 164

MAIN STEAM LEAD 9

MAIN STEAM LEAD 3

STEAM GENERATOR (1-4) [2-4] DC663206 -3

1B 115'-0"

1B 91'-0"

REACTOR COOLANT SYSTEM

FEEDWATER SUPPLY

ROOF AREA ABOVE 3BB

STM. GEN. BLOWDOWN

STM GEN BLOWDOWN SAMPLE

AUX F.W. TURB TO ATM

TO LEAD-4 DRAIN DRIP POT (33A)

TO DRAIN HDR. (33A)

TO ATM. (TYP FOR 4)

DRAIN

ORIFICE BLOCK

EXTR. STEAM HEATERS 1-3A, 1-4A, 1-4B 2-3A, 2-4A, 2-4B

EAST MS-R HP COILS

WEST MS-R HP COILS

STOP VLV. FCV 146

STOP VLV FCV 145

FCV 141 METAL

FCV 142 METAL

FCV 150

FCV 135

FCV 133 RFV-1 NON-RETURN

FCV 134 (RFV-2)

MAIN TURBINE

HP ELEMENT

WEST

EAST

W CONN ITEM NO. 2 PLACES

SEE SHT. 5

SEE SHT. 7 FOR DETAIL

N2 SUPPLY SEE SHT. 5 (30C)

FLOW LINE LEGEND

- HIGH PRESSURE STEAM & CONDENSATE
- LOW PRESSURE STEAM & CONDENSATE
- PIPING UNDER THE JURISDICTION OF ASME BOILER & PRESSURE VESSEL CODE SECT. I (1968) DESIGN TO ANSI B31.1 (1967)

NOTES:

1. LIMITS OF ASME BOILER AND PRESSURE VESSEL CODE SECTION I (1968) JURISDICTION. 1B 115'-0"

   MANUAL AND MOTOR OPERATED VALVES WITH ITEM NUMBER AND WITHIN THE LIMITS ARE UNDER SPEC. 8729.

2. MANUAL VALVES WITH ITEM NUMBER ON CLASS E LINES ARE UNDER SPEC 8762 EXCEPT AS NOTED.

   MANUAL VALVES WITH ITEM NUMBER ON CLASS _ LINES ARE UNDER SPEC 8729

3. ON ALL TRAPS & LCV DRAINS, FULL INSULATION IS USED UPSTREAM & PERSONNEL PROTECTION DOWNSTREAM.

4. N2 BLANKETING TEMPORARY CONNECTION. CONNECT ONLY WHEN REQUIRED.

5. ALL STEAM TRAPS ARE TO HAVE INTEGRAL STEAM STRAINERS.

6. CHECK VALVE 6 WELDED TO ISOLATION VALVE. BOTH ARE UNDER SPEC. 8721. (31-E, 31-D, 31-B & 31-A)

7. MANUAL VALVES WITH THIS NOTE SHALL BE:
   ITEM 13.1 —— FOR UNIT-1 DC-663125-8(AR-6814)- FOR UNIT-2 (31-D & E)

8. LT 536 PARALLEL LT 537 (I)

9. LT 546 PARALLEL LT 547 (I)

SYSTEM NO. 02, 03, 04
REF. DWG
106704 RLV1 SH 2
102004 RLV8 SH 3

P. G. & E. CO.	DRAWING NO.	CHANGE
SHEET 4 OF SHEETS	107191	1

STM. GEN. NOZZLES	
PGE	MFR.
1-A	1A
1-B	1B
3	2
4	3
5-A	4A
5-B	4B
6	5
7	6
8D-1	7B
8D-2	7A
9A-1	8A
9A-2	8D
9B-1	8B
9B-2	8E
9C-1	8C
9C-2	8F

ABOVE NOZ. EQUIV. TYP. FOR ALL GENS. SEE NOTE-8

FLOW LINE LEGEND

- HIGH PRESSURE STEAM & CONDENSATE
- LOW PRESSURE STEAM & CONDENSATE
- PIPING UNDER THE JURISDICTION OF ASME BOILER & PRESSURE VESSEL CODE SECT. I (1968). DESIGN TO ANSI B31.1 (1967)

NOTES:

1. LIMITS OF ASME BOILER AND PRESSURE VESSEL CODE SECTION I (1968) JURISDICTION.

   MANUAL AND MOTOR OPERATED VALVES WITH ITEM NUMBER AND WITHIN THE LIMITS ARE UNDER SPEC. 8729.

2. MANUAL VALVES WITH ITEM NUMBER ON CLASS E LINES ARE UNDER SPEC 8762 EXCEPT AS NOTED.

   MANUAL VALVES WITH ITEM NUMBER ON CLASS B OR C LINES ARE UNDER SPEC 8729 EXCEPT AS NOTED.

3. ON ALL TRAPS & LCV DRAINS, FULL INSULATION IS USED UPSTREAM FOR PERSONNEL PROTECTION DOWNSTREAM.

4. N2 BLANKETING TEMPORARY CONNECTION. CONNECT ONLY WHEN REQUIRED.

5. ALL STEAM TRAPS ARE TO HAVE INTEGRAL STEAM STRAINERS.

6. CHECK VALVE IS WELDED TO ISOLATION VALVE. BOTH ARE UNDER SPEC. 8721. (31-E, 31-D, 31-B & 31-A)

7. MANUAL VALVES WITH THIS NOTE SHALL BE:
   ITEM 13-1 —— FOR UNIT-1 DC-663125-B (4R-68314) FOR UNIT-2 (31-A&B)

8. (SEE TABLE (30C)) SUBSCRIPTS A, B, A-1, A-2, ETC. WERE ADDED TO NOZZLE NOS. TO DIFFERENTIATE SERVICE & INSTRUMENT TAGGING.
   REF. DWGS: DC-663206-3 (-13 TO -20) (-44 TO -51)

9. (FE-1) ORIFICE PLATE REMOVED. ORIFICE FLANGES WITH VALVES RETAINED (31B)

10. LT 516 PARALLEL LT 517 ③

11. LT 526 PARALLEL LT 527 ③

MAIN STEAM LEADS 1 & 2 RV DRAINS (SEE COOR. 31A)

SYSTEM NO. 02, 03, 04
RLF. DWG.
106704 RLV.2 SH.3
102004 RLV.8 SH.5

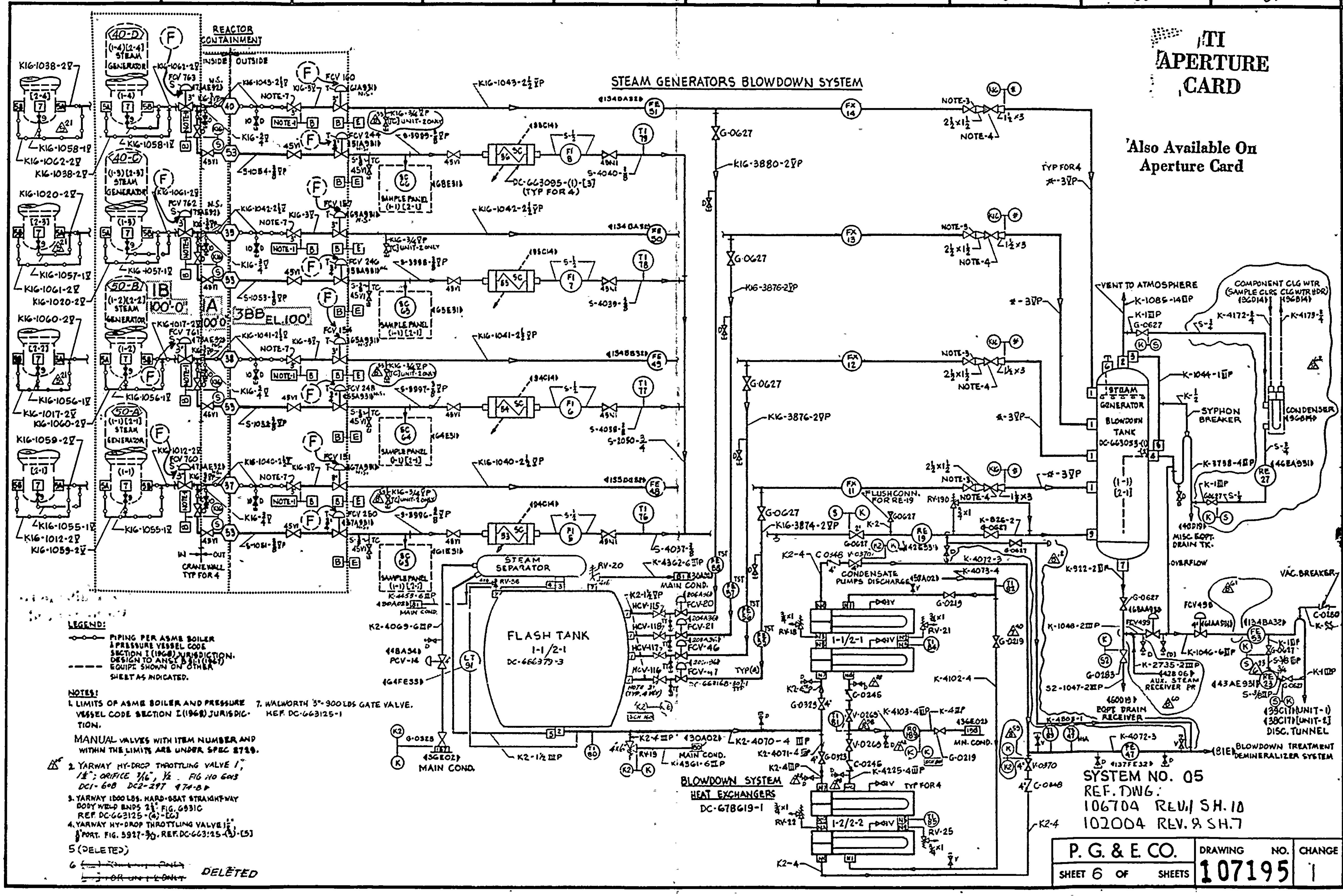
P.G. & E. CO.	DRAWING NO.	CHANGE
SHEET 5 OF 5 SHEETS	107195	1

TI APERTURE CARD

Also Available On Aperture Card

RM INDEXED REV. 35 MAIN STEAM

8405100106 -18



LEGEND:

PIPING PER ASME BOILER & PRESSURE VESSEL CODE SECTION I (1968) JURISDICTION. DESIGN TO ANSI B 31.1 (1967)

EQUIPT. SHOWN ON OTHER SHEET AS INDICATED.

NOTES:

1. LIMITS OF ASME BOILER AND PRESSURE VESSEL CODE SECTION I (1968) JURISDICTION.

MANUAL VALVES WITH ITEM NUMBER AND WITHIN THE LIMITS ARE UNDER SPEC 8739.

2. YARWAY HY-DROP THROTTLING VALVE 1", 1½"; ORIFICE 3/16", ½ FIG NO 6015 DC1-608 DC2-297 474-B

3. YARWAY 1000 LBS. HARD-SEAT STRAIGHTWAY BODY WELD ENDS 2½" FIG. 6931C REF. DC-663125-(4)-[6]

4. YARWAY HY-DROP THROTTLING VALVE 1½" PORT. FIG. 5927-3/16. REF. DC-663125-(3)-[5]

5 (DELETED)

6 ~~[illegible]~~ DELETED

7. WALWORTH 3"-900 LBS GATE VALVE. REF. DC-663125-1

SYSTEM NO. 05

REF. DWG.

106704 REV.1 SH. 10

102004 REV. 8 SH. 7

P. G. & E. CO.	DRAWING NO.	CHANGE
SHEET 6 OF SHEETS	107195	1

RM INDEXED REV. 1

8405100106 -19

LOOP 1 | LOOP 2 | LOOP 3 | LOOP 4

DRAIN TO REACTOR COOLANT DRAIN TK. | SIS. ACCUM. 170-C | PRESSURIZER SPRAY 97-A | DRAIN TO REACTOR COOLANT DRAIN TANK | SIS. BIT. 180-B | CVCS. EXCESS LET DOWN 122-E | CVCS. LET DOWN LINE 130-B

R.T.D. RETURN 103-D | RTD. COLD LEG 100-D | RTD. HOT LEG 105-D | LEAKOFF TO PRT. 50-A | SIS: SAFETY INJ. PUMP 1-1 DISCH. 190-E | SIS. BIT. 180-E | F.O. | RTD. COLD LEG 108-A | RTD. HOT LEG 108-B | VALVE LEAK-OFF TO PRT. 45-C | 50-B

I-A EL. 91 | I-B EL. 91'-0" | 31" TYP. | 1.05" O.D. 0.234" I.D. | SEE DETAIL 'A' 104-A | B.S.=BIOLOGICAL SHIELD NOTE 1

REACTOR VESSEL ITEM RCPV DC-663201 SHT. 1-9 | 65 INCORE THERMOCOUPLES | SAMPLING SYS. 210-D | SIS. ACCUM. 170-A | CVCS. REGEN. HEAT EXCH. OUTLET NORMAL CHARGING | SIS: SAFETY INJ. PP. 1-2 DISCH. 190-C | SIS. B.I.T. 180-C | RECIRC. TO RESIDUAL HT. REM. PPS. SUCT. HDR. 209-C | PRESSURIZER URGE LINE 94-A | SIS: SAFETY INJ. PP. 1-1 DISCH 190-D | SIS: SAFETY INJ. PUMP 1-2 DISCH. 190-D | CVCS. REGEN. HEAT EXCH. ALT. CHARGING 149-D | 149-C

STEAM GENERATOR ITEM PCS64 1-4 DC-663206-(19), [50] DC-663206-(20), [51] 40-D | STEAM GENERATOR ITEM PCS63 1-3 DC-663206-(17), [48] DC-663206-(16), [47] 40-C

REACTOR COOLANT PUMP ITEM PCPC 1-1 DC-663207-6 | REACTOR COOLANT PUMP ITEM PCPC 1-2 DC-663207-6 | REACTOR COOLANT PUMP ITEM PCPC 1-3 DC-663207-6 | REACTOR COOLANT PUMP ITEM PCPC 1-4 DC-663207-6

NOTES:

1. 29" INSIDE DIAMETER 103-D
2. 31" INSIDE DIAMETER 100-E
3. 27.5" INSIDE DIAMETER 102-E
4. ALL (W) ITEM NUMBERS IN RCS. ARE SHOWN WITHOUT PREFIX P.G.E. RC. REG. (PEPE)
5. SPRAY LINE SCOOP 33-E
6. ELBOW FLOW METERS 20-D
7. VENT PIPE FURNISHED WITH REACTOR VESSEL HEAD 14-C
8. HEAD GASKET MONITORING CONNECTIONS FURNISHED WITH REACTOR VESSEL 34-D
9. RTD. INSTALLED IN WELL 33-E
10. LOCATE CONNECTION IN BOTTOM HALF OF REACTOR COOLANT PIPING ON 45° ANGLE TO VERTICAL 33-B
15. TS-63 TO 67 ARE STRAPPED TO LEAK-OFF, 18" TO 24" FROM VALVE 31-D

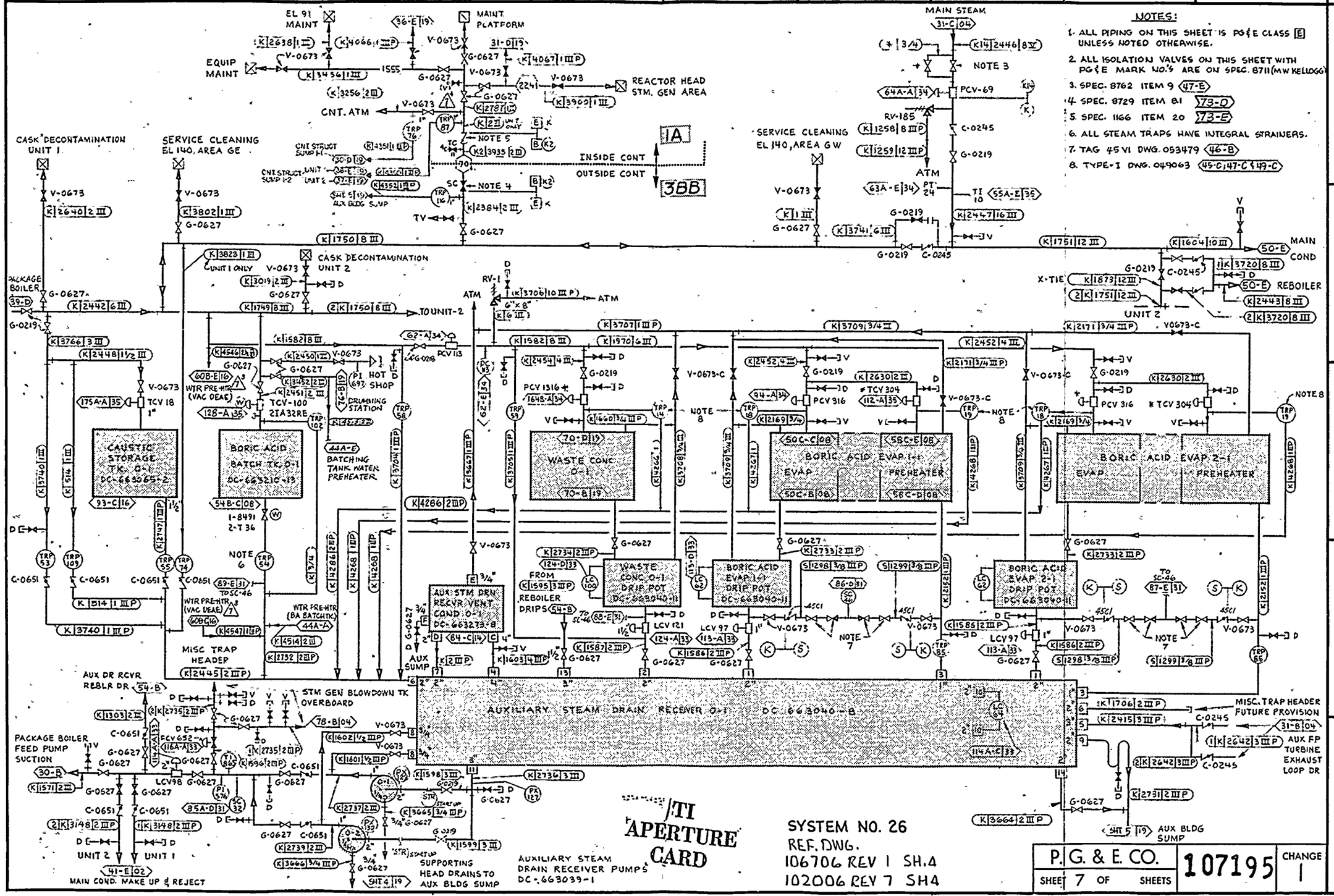
DELETED. 7

REF: DWG. DC-663220-(1) [2-5]

SYSTEM NO. 06, 08, 12, 15, 17, 18, 19

REF. DWG. 106107 ELV. 2 SH. 2 | 102007 ELV. 3 SH. 3

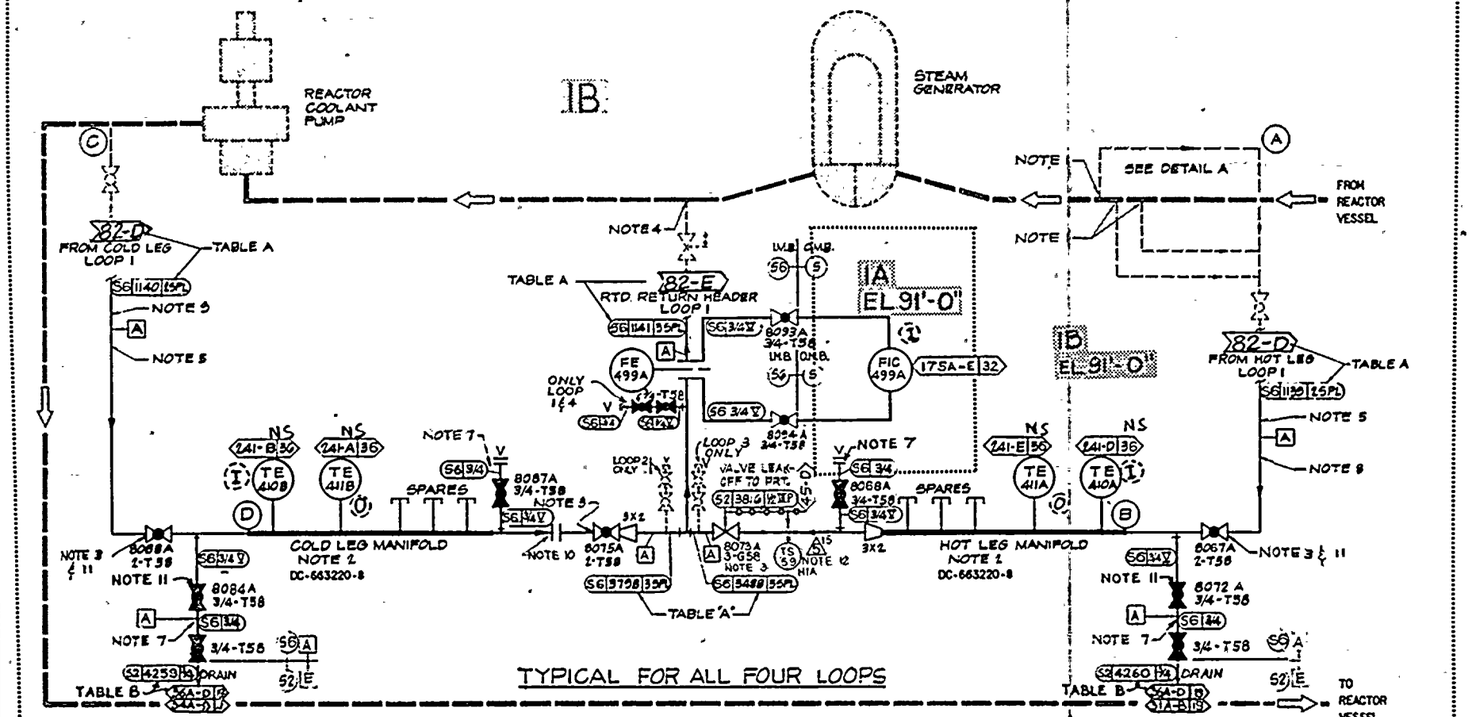
P.G.&E.CO. | SHEET NO. 8 OF SHEETS | DRAWING NUMEER 107195 | CHANGE 1



Also Available On Aperture Card

RM INDEXED REV. 1

8405100106 -20



RTD BYPASS INSTRUMENTATION					
INSTRUMENT		LOOP 1	LOOP 2	LOOP 3	LOOP 4
HOT LEG MANIFOLD					
1	TEMPERATURE ELEMENT	TE-410A	TE-420A	TE-430A	TE-440A
2		TE-411A	TE-421A	TE-431A	TE-441A
COLD LEG MANIFOLD					
1	TEMPERATURE ELEMENT	TE-410B	TE-420B	TE-430B	TE-440B
2		TE-411B	TE-421B	TE-431B	TE-441B
BYPASS RETURN LINE					
FLOW ELEMENT		FE-499A	FE-499B	FE-499C	FE-499D
FLOW INDICATOR & ALARM REFERENCE BLOCK		FIC-499A (175A-E 32) N-S	FIC-499B (175A-E 32) N-S	FIC-499C (175A-E 32) N-S	FIC-499D (175A-E 32) N-S
HOT LEG					
TEMPERATURE SWITCH		TS-59	TS-60	TS-61	TS-62

GENERAL NOTE:

PARALLEL 1 INCH PIPE PATHS SHOULD BE OF APPROX. EQUAL EQUIVALENT LENGTHS WITH FLOW PATH NOT EXCEEDING 6 FEET PENETRATIONS SHOULD BE IN THE SAME VERTICAL PLANE.

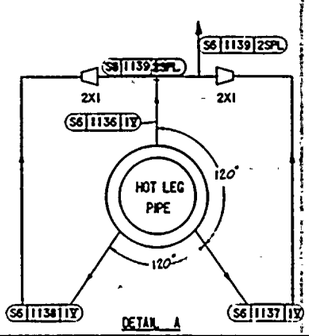


TABLE B

LOOPS	HOT LEG MANIFOLD DRAIN LINE NO.	HOT LEG MANIFOLD DRAIN REFERENCE	COLD LEG MANIFOLD DRAIN LINE NO.	COLD LEG MANIFOLD DRAIN REFERENCE
1	S2 4260 ¾	52A-D 19 N-S; 51A-B 19 N-S	S2 4259 ¾	52A-D 19 N-S; 54A-B 19 N-S
2	S2 4261 ¾	52A-D 19 N-S; 51A-B 19 N-S	S2 4262 ¾	54A-D 19 N-S; 51A-B 19 N-S
3	S2 4249 ¾	52A-D 19 N-S; 54A-B 19 N-S	S2 4255 ¾	51A-D 19 N-S; 52A-B 19 N-S
4	S2 4247 ¾	51A-D 19 N-S; 52A-B 19 N-S	S2 4253 ¾	52A-D 19 N-S; 52A-B 19 N-S

NOTES:

1. HOT LEG BYPASS LINE SCOOPS, S4-E LOCATE UP STREAM OF SURGE LINE. LOOP 2 ONLY
2. RTD MANIFOLD-PIPE AND RTD'S. SUPPLIED AS A PACKAGE MANIFOLD APPROX. 20 INCHES LONG. S1-C
3. LOCATE RTD. MANIFOLD ISOLATION VALVES MAX. 14 INCHES FROM MANIFOLD. S6-C
4. LOCATE CONNECTION ON UPPER 120° OF PIPE CIRCUMFERENCE. S3-E
5. ALL BYPASS LOOP PIPING AND THE RTD MANIFOLDS SHALL HAVE REMOVABLE INSULATION UP TO LOOP ROOT VALVES. S0-D
6. TRANSFERRED TO SHEET 3. NOTE 13
7. VENT TO BE INSTALLED AT HIGH POINT AND DRAIN AT LOW POINT. S2-D
8. LENGTH OF HOT LEG 2 INCH PIPE UPSTREAM OF RTD A TO B TO BE A MAXIMUM OF 3 FEET. S6-D
9. LENGTH OF COLD LEG 2 INCH PIPE UPSTREAM OF RTD MANIFOLD C TO D TO BE MAXIMUM OF 6 FEET. S0-D
10. FLANGES ARE INSTALLED FOR INSERTION OF FLOW LIMITING ORIFICES. IF REQUIRED PGE WILL FURNISH BLANK ORIFICE PLATES TO BE DRILLED TO SIZE IF REQUIRED. S2-C
11. VALVES WITH SUFFIX A REFER TO LOOP 1
    B REFER TO LOOP 2
    C REFER TO LOOP 3
    D REFER TO LOOP 4
    100-C
12. TS-59, 60, 61, & 62 ARE STRAPPED TO LEAKOFF PIPE 18" TO 24" FROM VALVE S3-C

SYSTEM NO. 06
REF. DWG.
106707 REV. 3 SH. 4
102007 REV. 5 SH. 5

REF. DWG. DC-663220-7

	TABLE A — RTD MANIFOLD CONNECTION LINE			
	LOOP 1	LOOP 2	LOOP 3	LOOP 4
HOT LEG MANIFOLD DISCHARGE	103-C S6 3488 3SPL	103-C S6 3489 3SPL	103-C S6 3495 3SPL	103-C S6 3496 3SPL
COLD LEG MANIFOLD DISCHARGE	102-C S6 3798 3SPL	102-C S6 3799 3SPL	102-C S6 3800 3SPL	102-C S6 3801 3SPL
FROM HOT LEG LINE	82-D S6 1139 2SPL	87-D S6 1145 2SPL	87-B S6 1151 2SPL	82-B S6 1157 2SPL
FROM COLD LEG LINE	82-D S6 1140 2SPL	87-E S6 1146 2SPL	87-B S6 1152 2SPL	82-B S6 1159 2SPL
BYPASS RETURN LINE	82-E S6 1141 3SPL	87-E S6 1147 3SPL	88-B S6 1153 3SPL	81-B S6 1158 3SPL
VALVE LEAK-OFF TO PRESS RELIEF TANK	95-E S2 3816 1 IIP	95-D S2 3817 1 IIP	97-B S2 3818 1 IIP	97-A S2 3819 1 IIP

RM INDEXED REV ___

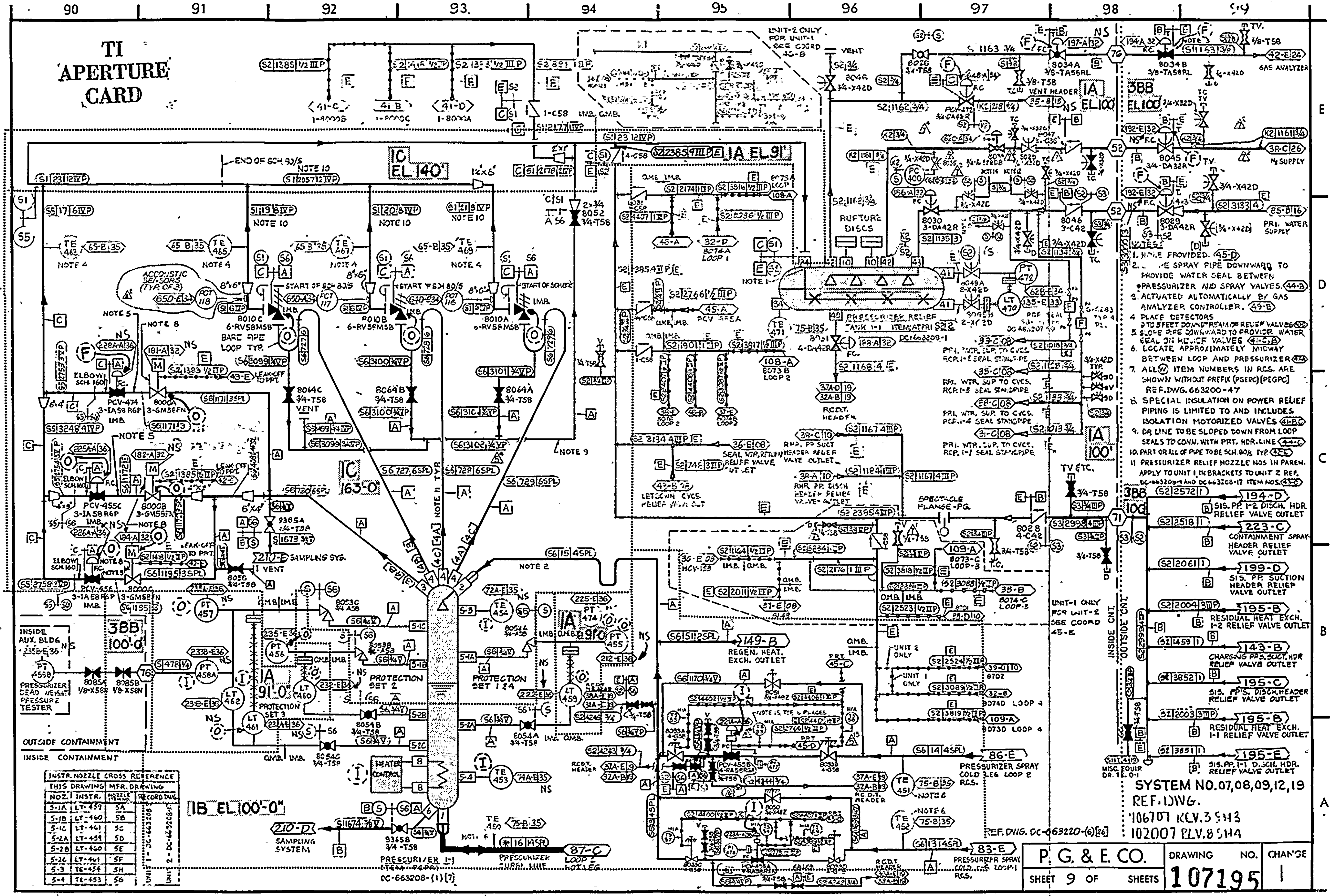
P. G. & E. CO.	DRAWING NO.	CHANGE
SHEET 10 OF SHEETS	107195	1

RM INDEXED REV. 1

35 [illegible]

8405100106-23

TI APERTURE CARD

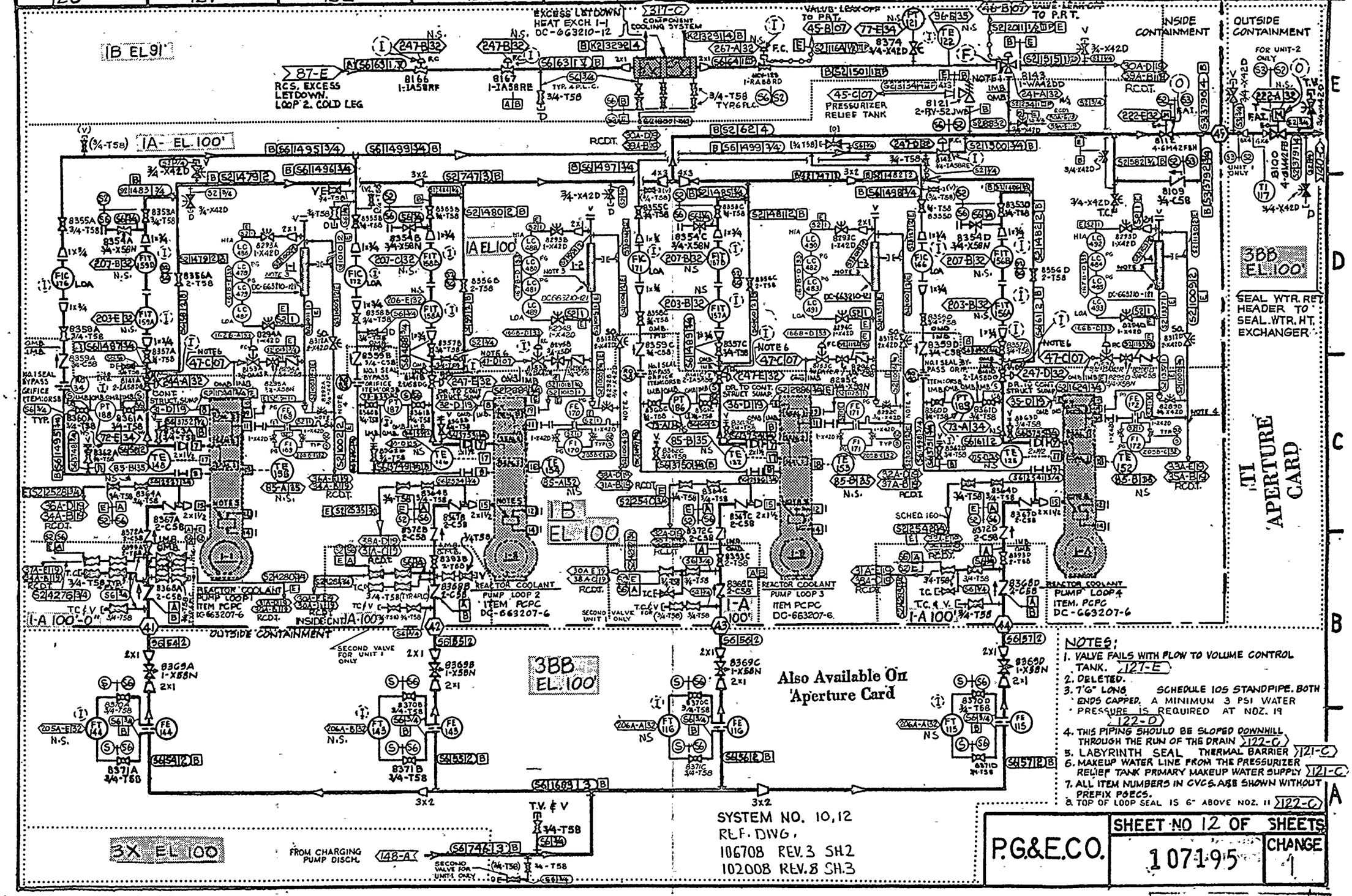


INSTR. NOZZLE CROSS REFERENCE			
THIS DRAWING		MFR. DRAWING	
NOZ.	INSTR.	NOZZLE	RECORD DWG.
5-1A	LT-459	5A	UNIT 1 - DC-663208 / UNIT 2 - DC-663208-1
5-1B	LT-460	5B	
5-1C	LT-461	5C	
5-2A	LT-459	5D	
5-2B	LT-460	5E	
5-2C	LT-461	5F	
5-3	TE-454	5H	
5-4	TE-453	5G	

Also Available On Aperture Card

RM INDEXED REV.

8405100106-22



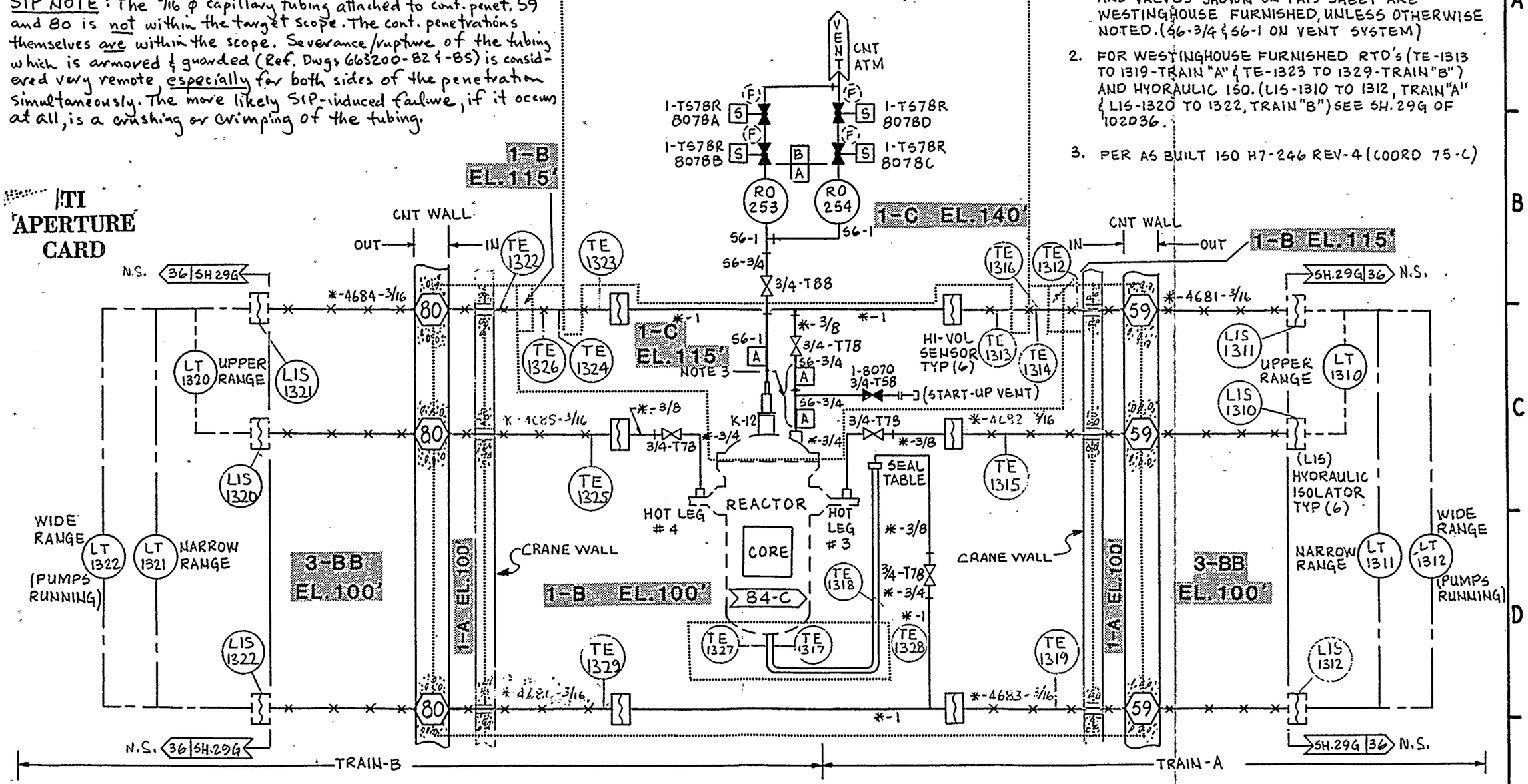
110 111 112 113 114 115 116 117 118 119

A B C D E

SIP NOTE: The 3/16" ϕ capillary tubing attached to cont. penet. 59 and 80 is not within the target scope. The cont. penetrations themselves are within the scope. Severance/rupture of the tubing which is armored & guarded (Ref. Dwgs 663200-82 & -85) is considered very remote, especially for both sides of the penetration simultaneously. The more likely SIP-induced failure, if it occurs at all, is a crushing or crimping of the tubing.

NOTES

1. ALL INSTRUMENTS AND ASSOCIATED TUBING, AND VALVES SHOWN ON THIS SHEET ARE WESTINGHOUSE FURNISHED, UNLESS OTHERWISE NOTED. (S6-3/4 & S6-1 ON VENT SYSTEM)
2. FOR WESTINGHOUSE FURNISHED RTD's (TE-1313 TO 1319 - TRAIN "A" & TE-1323 TO 1329 - TRAIN "B") AND HYDRAULIC ISO. (LIS-1310 TO 1312, TRAIN "A" & LIS-1320 TO 1322, TRAIN "B") SEE SH. 29G OF 102036.
3. PER AS BUILT ISO H7-246 REV-4 (COORD 75-C)



TI APERTURE CARD

Also Available On Aperture Card

REACTOR VESSEL LEVEL INSTRUMENTATION & VENT SYSTEMS

REF: DC-663200-82, (-84) & [-85], DCO-EM-809R2 & DCO-EM-569

SYSTEM NO. 06

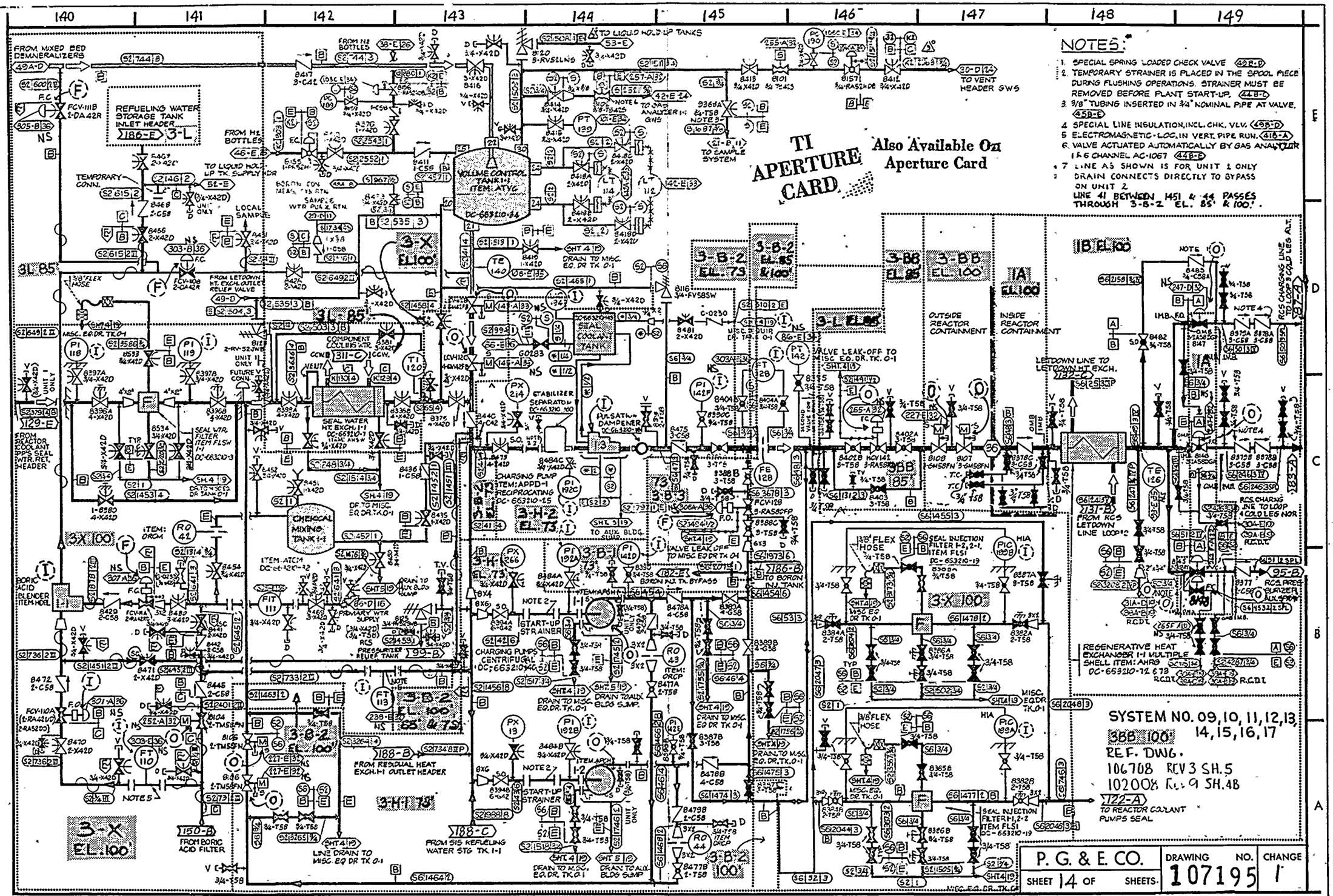
REF. DWG. 106707 REV. 3 SH. 4A
102007 REV. 9 SH. 7

PG&E CO.		107195	REV. 1
SHEET 11 OF SHEETS		MICROFILM	

RE-INDEXED REV. 1

61-4451 3-79

8405100106-24


NOTES:
1. SPECIAL SPRING LOADED CHECK VALVE 42B-D
2. TEMPORARY STRAINER IS PLACED IN THE SPOOL PIECE DURING FLUSHING OPERATIONS. STRAINER MUST BE REMOVED BEFORE PLANT START-UP. 44B-D
3. 3/8" TUBING INSERTED IN 3/4" NOMINAL PIPE AT VALVE. 45B-E
4. SPECIAL LINE INSULATION, INCL. CHK. VLV. 43B-D
5. ELECTROMAGNETIC-LOC. IN VERT. PIPE RUN. 41B-A
6. VALVE ACTUATED AUTOMATICALLY BY GAS ANALYZER IAG CHANNEL AC-1067 44B-E
7. LINE AS SHOWN IS FOR UNIT 1 ONLY
8. DRAIN CONNECTS DIRECTLY TO BYPASS ON UNIT 2.
LINE 41 BETWEEN 1451 & 44 PASSES THROUGH 3-B-2 EL. 85' & 100'.
TI APERTURE CARD
Also Available On Aperture Card
SYSTEM NO. 09,10,11,12,13, 14,15,16,17
3BB 100
REF. DWG.
106708 REV 3 SH.5
102008 Rev 9 SH.4B
122-A TO REACTOR COOLANT PUMPS SEAL
P. G. & E. CO.
DRAWING NO. 107195
CHANGE 1
SHEET 14 OF SHEETS
RM INDEXED REV.
8405100106-27

RM INDEXED REV.

130 131 132 133 134 135 136 137 138 139

E D C B A

FROM CHARGING PUMPS 147-C

REGENERATIVE HEAT EXCH. 1-1 MULTIPLE SHELL ITEM: AHRG DC-663210-12,73

INSIDE REACTOR CONTAINMENT

OUTSIDE REACTOR CONTAINMENT

COMPONENT COOLING WATER

LETDOWN HT. EXCHANGER 1-1 DC-663210-11 ITEM: AHNR

VALVE LEAK-OFF TO MISC. EQ. DR. TK. 0-1

TO VOLUME CONTROL TK 1-1

UNIT 1 ONLY

8124 2-RV52JWB

MIX BED DEMINERALIZER

8408A 2-T58

PCV-135 2-RA56DD

8408B 2-T58

8409 2-T58

8405 2-T58

8406 3/4-T58

8407A 3/4-T58

8407B 3/4-T58

8149A 2-1A58RG

8149B 2-1A58RG

8149C 2-1A58RG

8152 2-1A56RG

8117 2-RV56JNB

HCV-133 2-RA56RG

LCV-459 2-1A58RGP

LCV-460 3-1A58RGP

88-E FROM RCS. LETDOWN LINE FROM LOOP #2

148-C TO RCS. CHARGING LINE

45-C07 RCS. PRESSURIZER RELIEF TANK 1-1

31-D10 FROM RESIDUAL HT. REMOVAL HT. EXCH. OUTLET

DRAIN TO MISC. EQUIP. DR. TK. 0-1

VALVE LEAK-OFF TO MISC. EQUIP DR. TK. 0-1

TO SAMPLE SYSTEM

UNIT 1 UNIT 2 TYP. RCDT.

1B EL. 91'

A EL. 91'

3BB EL. 105'

3-L EL 85'-0"

35 M/M N27

NOTES.

1. SPECIAL LINE INSULATION TO LCV-460 INCLUDING VALVE (41-B)
2. PRESSURIZER LOW LEVEL SIGNAL (40-B)
3. LETDOWN LINE TO BE ROUTED LONG ENOUGH FOR RADIATION DECAYING PURPOSES. (41-B)
4. 3/8" TUBING INSERTED IN 3/4" NOMINAL PIPE AT VALVE. (49-C)
5. FLOW THROUGH RO 27 IS 45 GPM. FLOWS THROUGH RO 28 & RO 29 ARE 75 GPM. (42-C)

SYSTEM NO. 12

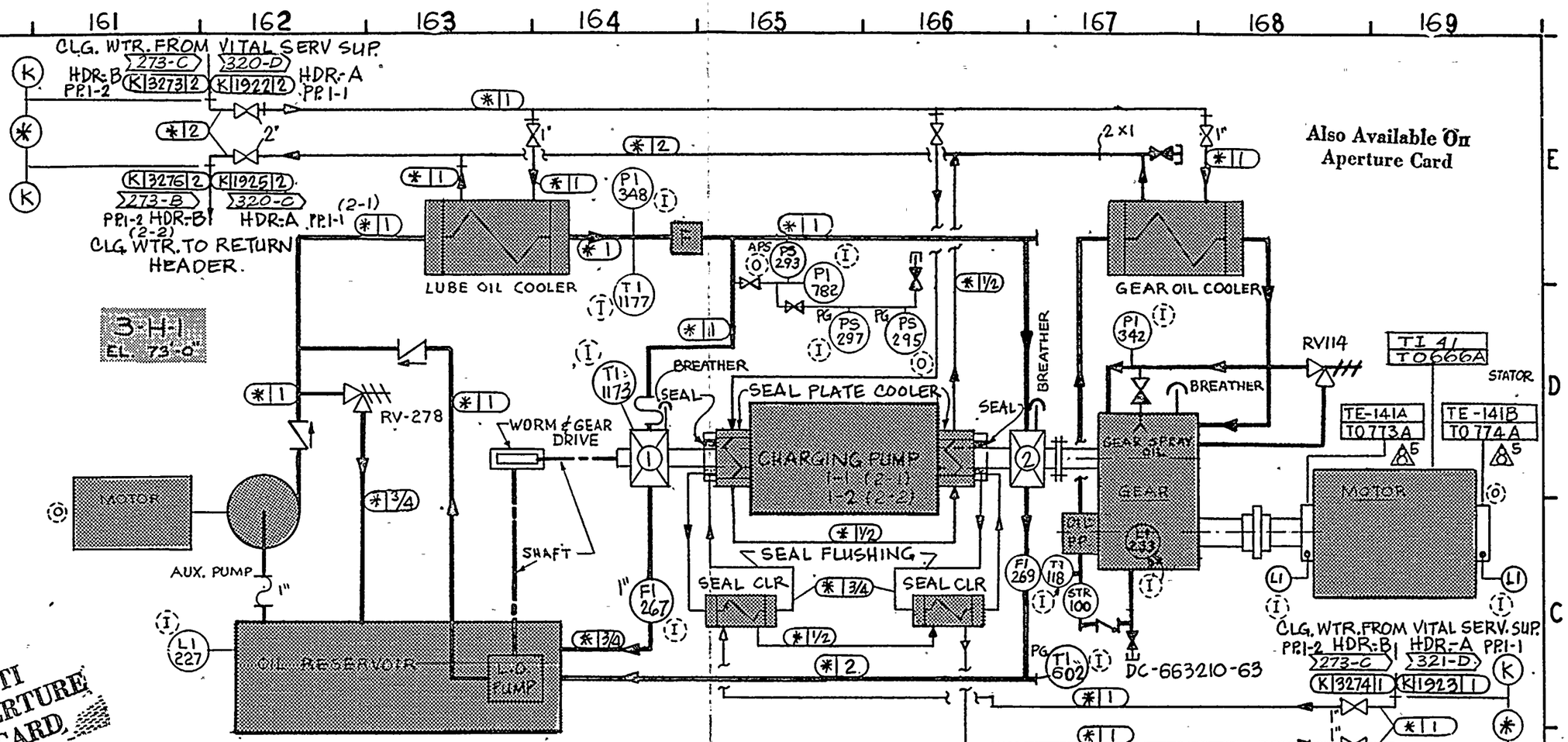
REF. DWG: DC-663210-(14) & (15) [167] & [168]

REF. DWG. { 106708 REV. 3 SH. 3
102008 REV. 5 SH. 4

P.G.&E.CO.	SHEET NO 13 OF SHEETS	
	DRAWING NUMBER 107195	CHANGE 1

RM INDEXED REV. 1

35 M/M N27



TI APERTURE CARD

DC-663210-50

CENTRIFUGAL CHARGING PUMPS

LUBE OIL, GEAR OIL, AND SEAL FLUSH & CLR. PIPING

CHARGING PUMP	INSTRUMENT ON LUBE OIL SYSTEM										INSTRUMENT ON GEAR OIL SYSTEM					
	OIL RESEV. LEVEL	RELIEF VALVE AFTER PUMP	LUBE OIL COOLER OUT	PRES. BEFORE FILTER	PRES. AFTER FILTER	AUTO PUMP START.	THRUST BRG. IND. (1)	THRUST BRG. OUT (1).	RAD BRG. OUT (2)	LUBE OIL COOLER WTR. SUPPLY. CROSS REF. CO-ORD. SCHEM.	OIL RESEV LEVEL	OIL RESEV TEMP.	OIL PUMP DISCH STR	PRES. AFTER COOLER	RELIEF VALVE AFTER COOLER	GEAR COOLER WTR. SUPPLY CROSS REF. CO-ORD.-SCHEM.
	LI	RV	TI	PI	PI	PS	TI	FI	FI		LI	TI	STR	PI	RV	
1-1 (2-1)	227	278	1177	348	782	293	1173	267	269	320-C	233	118	100	342	114	320-C
1-2 (2-2)	228	279	1178	349	783	294	1174	268	270	273-C	234	119	101	343	115	274-C

	INBD. MOTOR BRG.	OUTBD. MOTOR BRG.	PUMP INBD. BRG. OIL	STATOR WINDING
1-1 (2-1)	TE 141A/T0773A	TE 141B/10774A	TI-602	TI 41/ T0666A
1-2 (2-1)	TE 141C/T0775A	TE 141D/T0776A	TI-603	TI 42 / T0667A

CHARGING PP.	MTR. INTERLOCK	L.P. ALARM
1-1 (2-1)	PS-295	PS-297
1-2 (2-2)	PS-296	PS-298
SET POINTS	CLOSE 9 PSI INCI OPEN 7 PSI DECR	CLOSE 7PSI DECR. OPEN 10 PSI INCR.

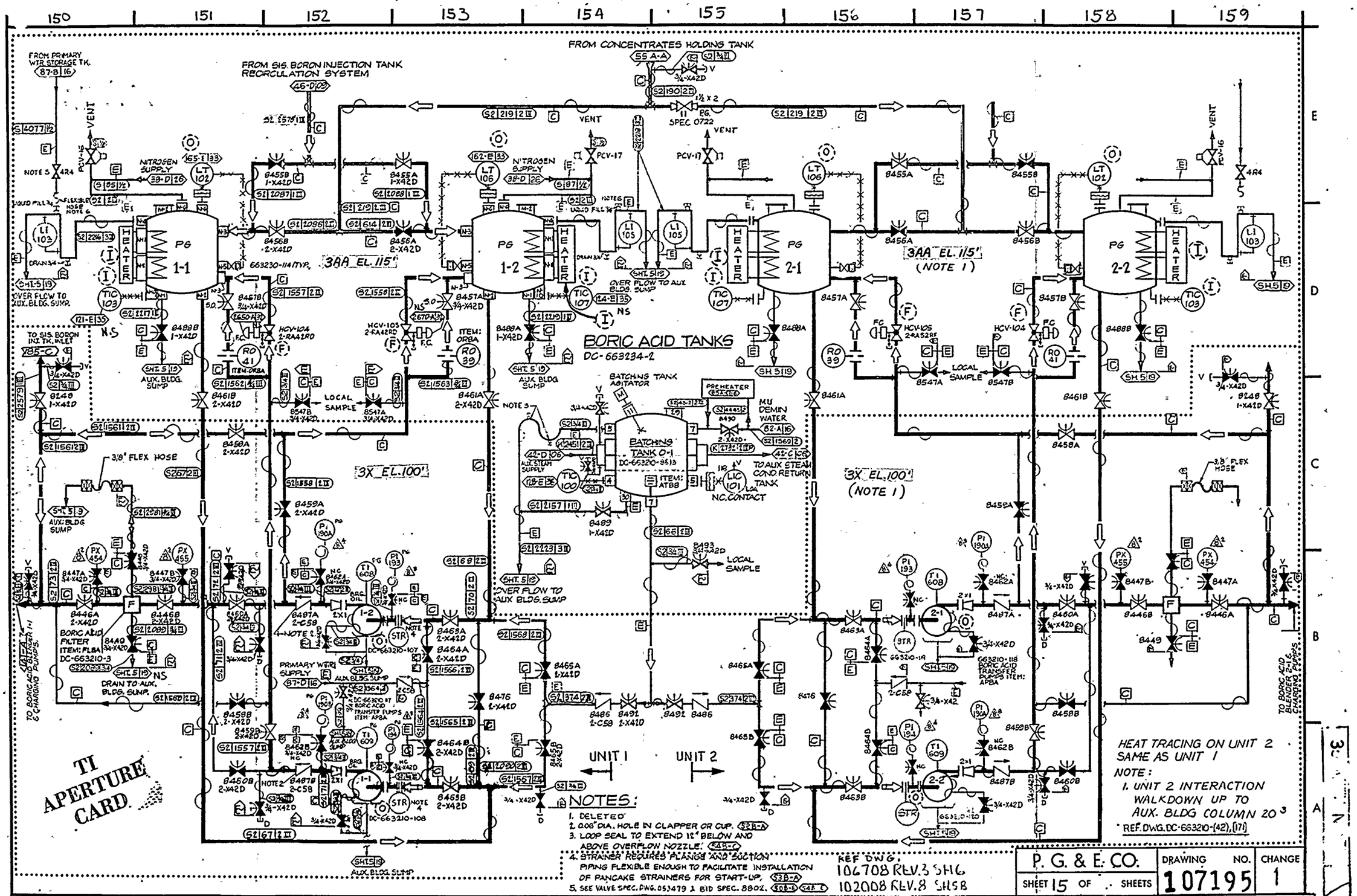
TO BE PURCHASED BY P.G.&E. & FIELD LOCATED

SYSTEM NO. 11
REF. DWG.
106708 REV. 3 SH. 12
102008 REV. 8 SH. 8

P.G.&E.CO.	SHEET NO. 16 OF SHEETS	
	DRAWING NUMBER 107195	CHANGE 1

RM INDEXED REV. /

8405100106-29



REF DWG:
106708 REV. 3 SH 6
102008 REV. 8 SH 8

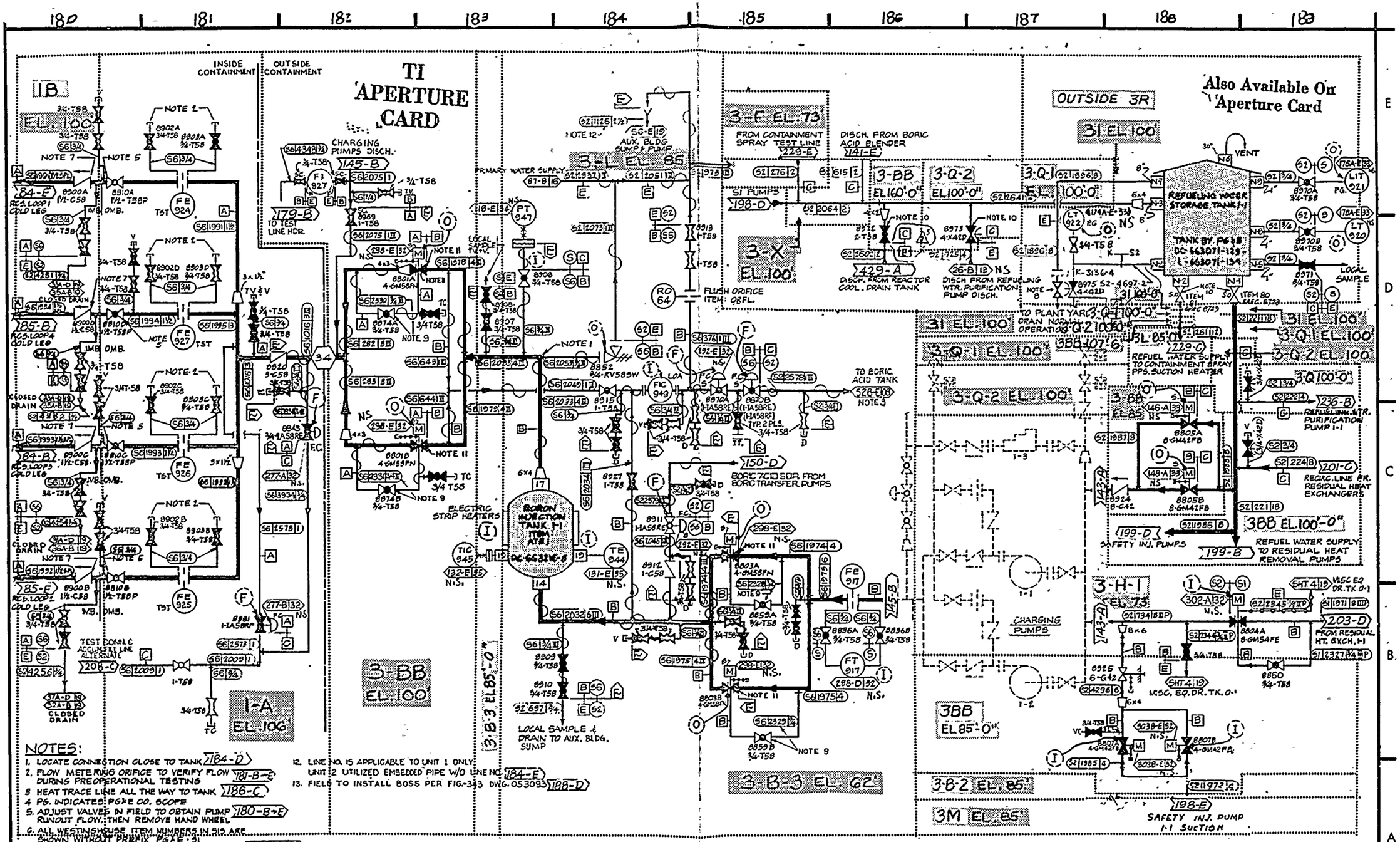
SYSTEM NO. 13, 17

P. G. & E. CO.	DRAWING NO.	CHANGE
SHEET 15 OF SHEETS	107195	1

RM INDEXED REV. ____

Also Available On Aperture Card

8405100106-28



NOTES:

1. LOCATE CONNECTION CLOSE TO TANK 184-D
2. FLOW METERING ORIFICE TO VERIFY FLOW DURING PREOPERATIONAL TESTING 181-B→C
3. HEAT TRACE LINE ALL THE WAY TO TANK 186-C
4. PG. INDICATES PG&E CO. SCOPE
5. ADJUST VALVES IN FIELD TO OBTAIN PUMP RUNOUT FLOW. THEN REMOVE HAND WHEEL 180-B→E
6. ALL WESTINGHOUSE ITEM NUMBERS IN SI.P. ARE SHOWN WITHOUT PREFIX "PG&E-31"
7. SPECIAL LINE INSULATION INCLUDING CHECK 180-B→E
8. WHEN WATER IS CONTAMINATED BLIND FLANGE WITH HOSE BIBB MUST BE INSTALLED DRAINING TO MISC. EQUIP. DRAIN TANK 0-1 187-D
9. FOR UNIT 1 ONLY. 182-D 182-C 185-B
10. CHAIN OPERATED 186-D 187-D 188-D 185-A
11. USE DARLING MNF. VALVES IN UNIT 1 AND V.E.LAN MNF. VALVES IN UNIT 2 182-D 182-C 185-B 185-C
12. LINE NO. 15 APPLICABLE TO UNIT 1 ONLY UNIT 2 UTILIZED EMBEDDED PIPE W/O LINE NO. 184-E
13. FIELD TO INSTALL BOSS PER FIG.-343 DWG. 053093 188-D

SYSTEM NO. 15, 16, 17, 18
REF. DWG.
106709 REV. 4 SH. 3
102009 REV. 6 SH. 4

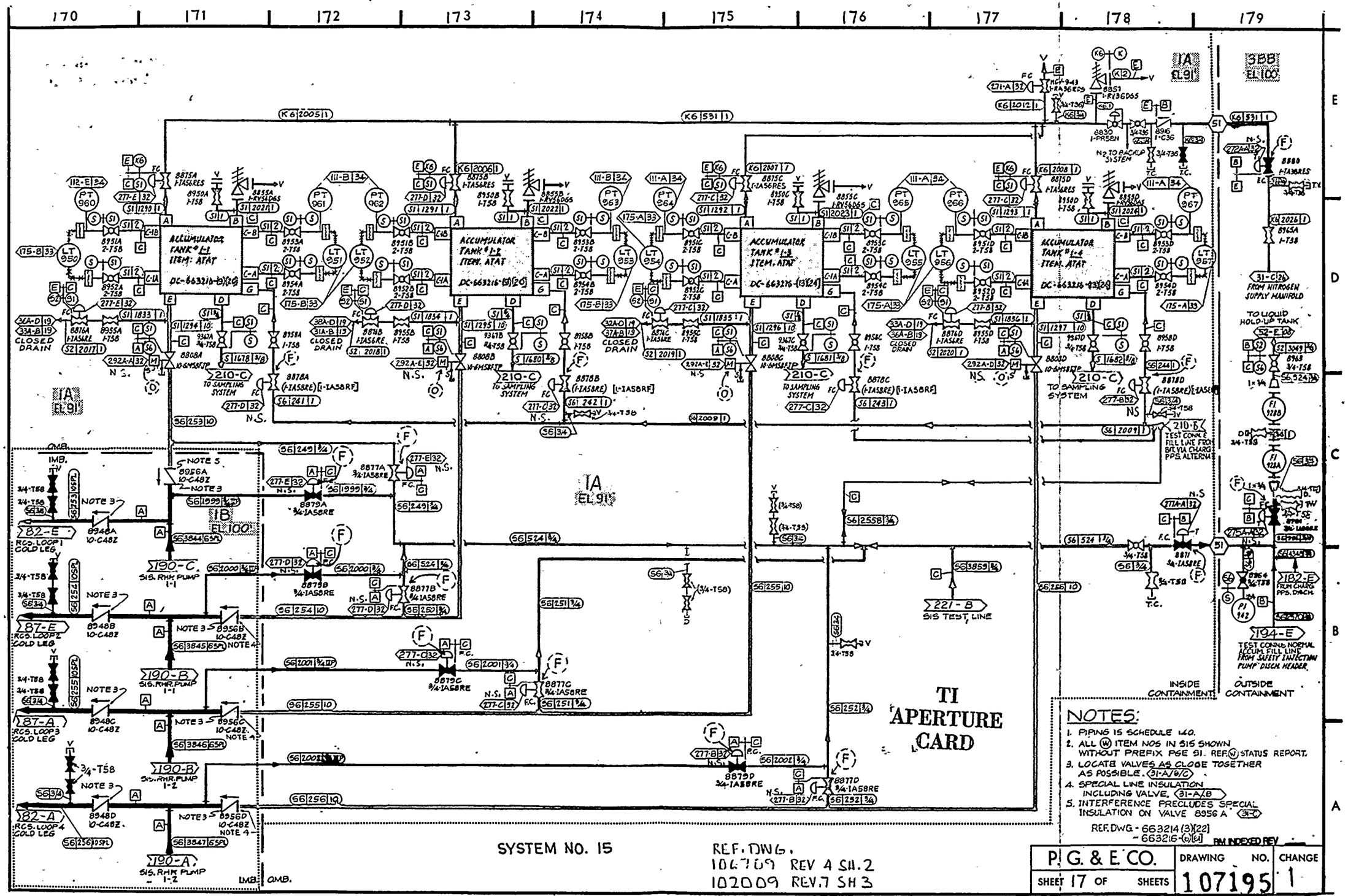
REF. DWG. DC-663216-(1)[63]

RM INDEXED REV ___

P. G. & E. CO.	DRAWING NO.	CHANGE
SHEET 18 OF SHEETS	107195	1

RM INDEXED REV. 1

8405100106-31



NOTES:

1. PIPING IS SCHEDULE 140.
2. ALL (W) ITEM NOS IN SIS SHOWN WITHOUT PREFIX PGE 91. REF (N) STATUS REPORT.
3. LOCATE VALVES AS CLOSE TOGETHER AS POSSIBLE. 31-A/B/C
4. SPECIAL LINE INSULATION INCLUDING VALVE. 31-A/B
5. INTERFERENCE PRECLUDES SPECIAL INSULATION ON VALVE 8956 A 31-C

REF. DWG. - 663214 (3)[22]
- 663216-(3)[4]

RM INDEXED REV. ___

SYSTEM NO. 15

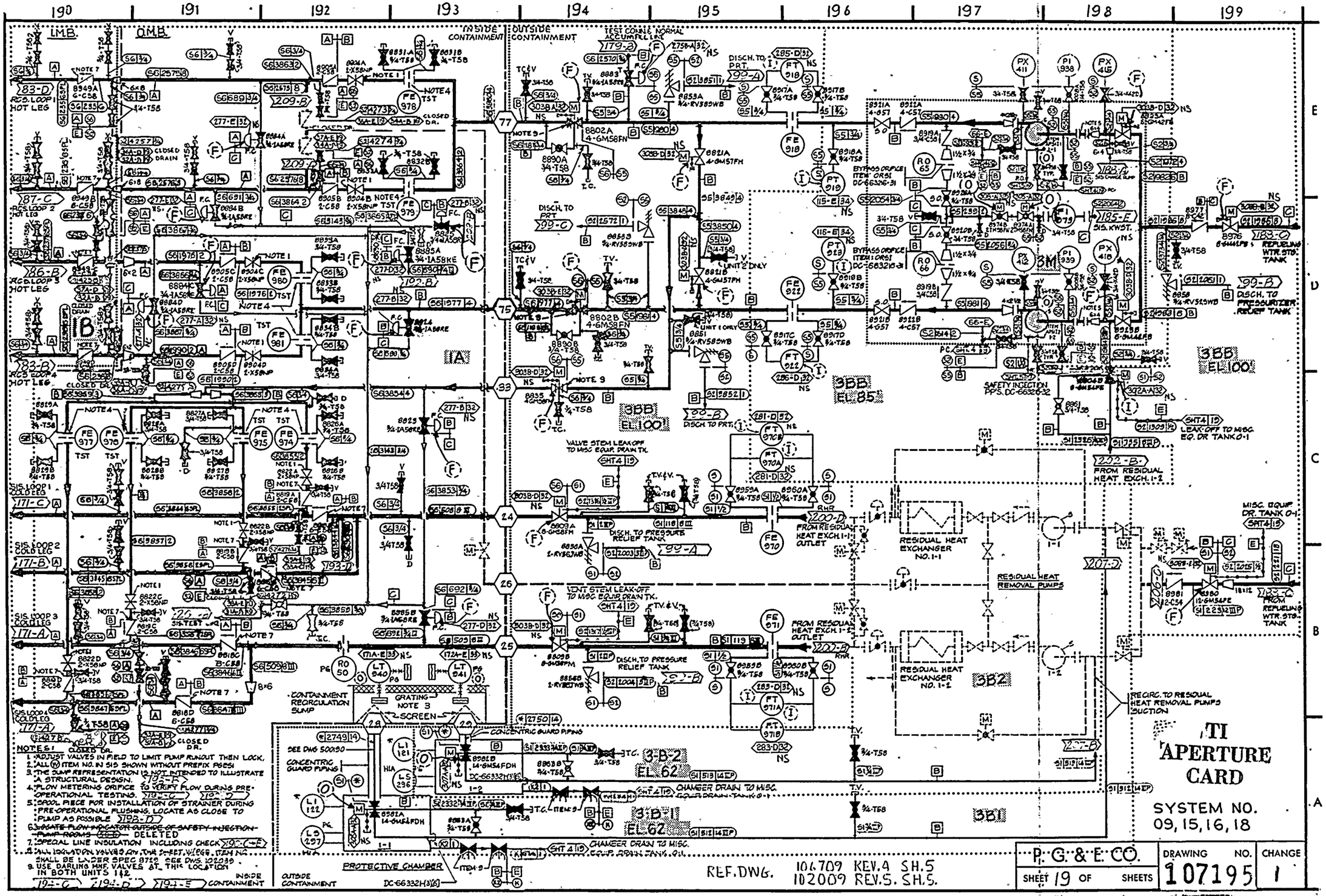
REF. DWG.
106709 REV 4 SH. 2
102009 REV. 7 SH 3

P. G. & E. CO.	DRAWING NO.	CHANGE
SHEET 17 OF SHEETS	107195	1

RM INDEXED REV. 1

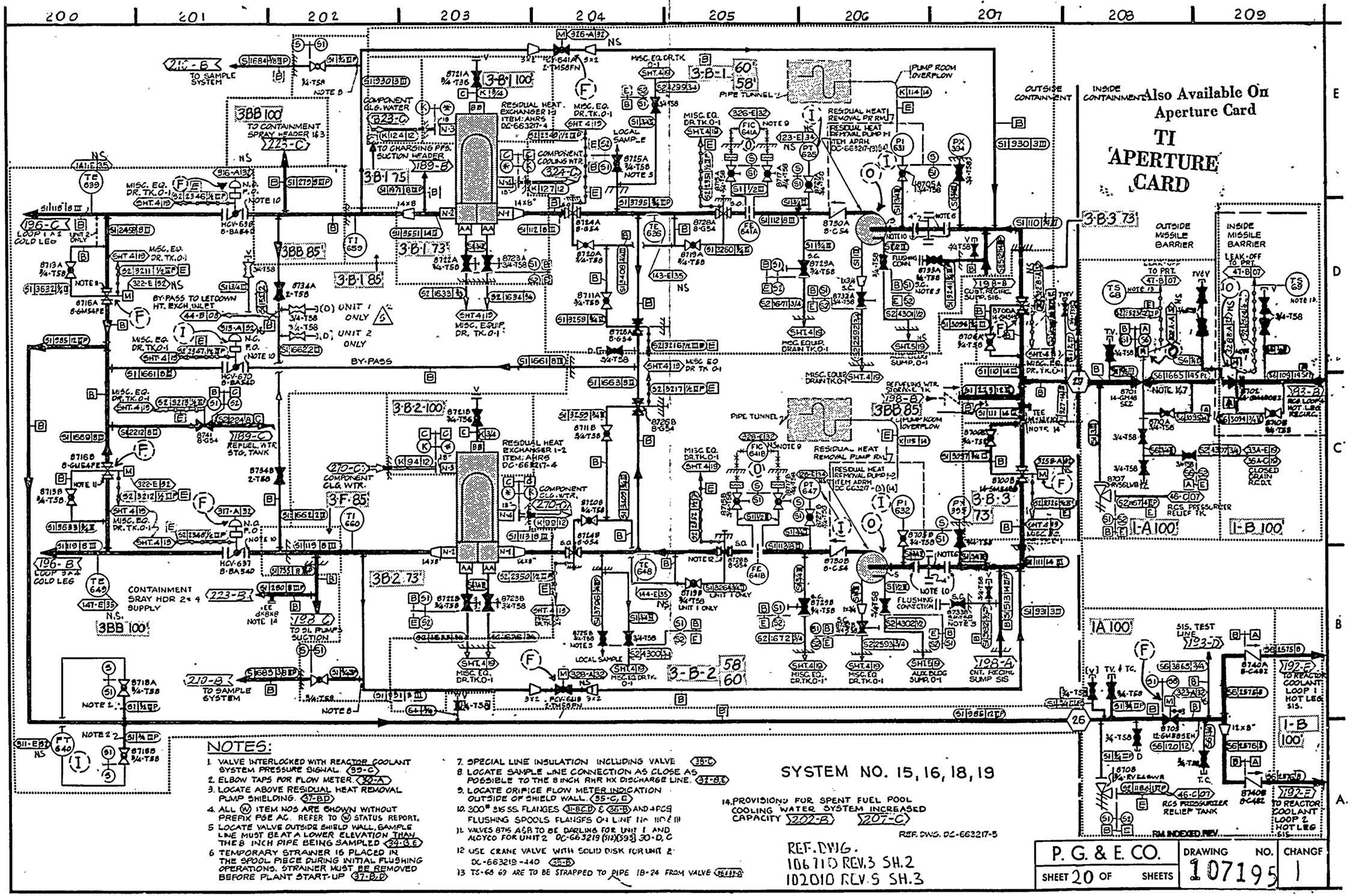
Also Available On Aperture Card

8405100106 -30



Also Available On Aperture Card

8405100106-32



220 221 222 223 224 225 226 227 228 229

CONTAINMENT PRESSURE TRANSMITTERS

1-A EL 100'-0"

3BB EL 100'-0"

1-A EL 117'-0"

TC. AIR TEST

9004A 2-T58

3/4-T58

S3 2712

10"x8" 9006A 8-E42

DRAIN LINE STUB UNIT-2 ONLY

9011A 8-C42

NOTE 9

S3 325 8"P

S2 264 8"P

S3 325 8"P

S3 270 10

1-C EL 140

S3 2372 6

S3 2371 6

EL 133'-0"

RO 75

INSIDE CONTAINMENT

OUTSIDE CONTAINMENT

DRAIN LINE UNIT-1 ONLY

DRAIN LINE STUB UNIT-2 ONLY NOTE-10

SPRAY RING HEADERS

NOTE-10 (UNIT-2 ONLY)

EL 256'-0"

EL 276'-6"

EL 293'-6"

EL 298'-0"

S3 2375 6

S3 2376 8

S3 2377 6

S3 2377 4

8 NOZZLES

54 NOZZLES

164 NOZZLES

117 NOZZLES UNIT 1 ONLY

NOTE-10

116 NOZZLES UNIT 2 ONLY

RO 74

S3 2373 4

S3 2374 8

DRAIN LINE STUB UNIT-2 ONLY NOTE-10

DRAIN LINE UNIT-1 ONLY

S3 1

T.C. & AIR TEST

9004B 2-T58

S3 278 2

S3 271 10

1-A EL 117'-0"

10"x8" S.O.

S3 326 8"

9011B 8-C42

30

NOTE 9

S3 326 8"P

S2 265 8"P

NOTE 9

9007A 3/4-RV526W3

9007B 3/4-RV526W8

OUTSIDE CONTAINMENT

INSIDE CONTAINMENT

9009A 8-GM54FE

9009B 8-GM54FE

NOTE 7

9012A 3/4-T58

9012B 3/4-T58

S1 3/4

S1 2963 8"P

S1 279 8"P

202-E RESIDUAL HEAT EXCHANGER 1-1

S2 272 1

S2 2518 1

99-C RCS-PRT

EL 100'-0"

S2 273 1

RESIDUAL HEAT EXCHANGER 1-2 20-B

S1 280 8"P

S1 2964 8"P

S1 3/4

NOTE 7

S2 2506 3/4

S2 2530 8"P

NOTE 9

S2 265 8"P

NOTE 9

9018A 8-C42

9018B 8-GM42FB

S2 1/2

3/4-T58

FE 932

EL 100'-0"

NOTE 8

90158 8-G52

NOTE 6

TC

TV

PG

LT

LIC 932

LOA

1-A EL 100'-0"

S 4529 1 1/4

80

PT 939

131A-E 34 NS

3BB EL 100'-0"

131A-B 34 NS

S 4525 1 1/4

59

PT 938

CONTAINMENT PRESSURE TRANSMITTERS

S 4526 1/4

76

PT 934

138-E 34 NS

S 2514 1/4

59

PT 935

135A-E 34 NS

S 2515 1/4

78

PT 936

135-B 34 NS

S 637 1/4

52

PT 937

131-E 34 NS

S 4454 1/4

52

PT 932

133A-E 34 NS

3BB EL 117'-0"

3BB EL 100'-0"

3/4-T58

T.V.

NOTE 9

S2 264 8"P

S3 325 8"P

S3 2712

9002A 8-C42

9001A 8GM42FA

FE 931

P.G.

NOTE 8

SHT 4 19 MISC EQUIP DR TANK 0-1

S2 2649 3

S2 2504 3/4

S1 2963 8"P

S1 279 8"P

3BB 100'-0"

NOTE 6

S2 264 8"P

9015A 8-G52

EDUCTOR #1-1 ITEM: EDSA

S2 2649 3

NOTE 4

8998A 3-C42

8997A 3-X42D

8998B 3-C42

8997B 3-X42D

8998C 3-C42

S2 2681 3

S2 2682 3

S2 2667 3

S2 1/2

FE 930

LOCAL SAMPLE

NOTE 5

FT 930

347A-E 32 NS

8995A 3/4-T58

8995B 3/4-T58

S2 1/2

S2 1/2

3-F EL 73'-0"

3/4-X42D

S2 2762

ROTAMETER

FI 929

8985 2-T58

185-E 8"P. TEST LINE

S2 2501 2

S2 2502 2

S.C. 9000A 2-T58

P1 933C

9009C 3/4-X42D

S2 3/4

V 3/4-T58

P1 933A

9009A 3/4-X42D

PX 417

3/4-X42D

RC-663076-1 CONTAINMENT SPRAY PUMP 1-1 ITEM: APCS

S2 1813 3/4

S2 1814 3/4

3/4-T58 TYP.

NOTE 3

S2 1812 3/4

S2 1811 3/4

S2 1 SHT. 5 19 DR. TO AUX. BLDG SUMP.

SHT. 4 19 DR. TO MISC. EQUIP. DR. TK. 0-1

S.C. 8999A 10-G42

S2 262 10

TI APERTURE CARD

Also Available On Aperture Card

EDUCTOR #1-2 ITEM EDSA

S2 2649 3

3/4-T58

S2 3/4

NOTE 6

S2 2532 3/4

NITROGEN SUPPLY

38-E 26

S2 3/4

S2 3152 1

S2 2 23

8998A 3-C42

8997A 3-X42D

S2 3/4

8998C 3-C42

S2 2667 3

S2 1/2

S2 1/2

FE 930

LOCAL SAMPLE

S.C. 8986 1-T58

S2 2153 3 C

NOTE 2

3V 3/4-T42D

8987 3/4-RV525G

S2 3154 3/4

S2 3/4

8989 3/4-T58

S2 2 23

8989A 2-T58

LIC 932

LOA

P1 972

NOTE 5

FT 930

347A-E 32 NS

8995A 3/4-T58

8995B 3/4-T58

S2 1/2

S2 1/2

EDUCTOR #1-2 ITEM EDSA

S2 2650 3

S.O. 3X42D

S2 3/4

P1 933D

90090 3/4-X42D

S2 3/4

S2 265 8

DC-663076-1 CONTAINMENT SPRAY PUMP 1-2 ITEM: APCS

S2 2029 3/4

S2 2031 3/4

S2 2028 3/4

3/4-T58 TYP.

9009B 3/4-X42D

S2 3/4

NOTE 3

PX 418

3/4-X42D

S2 3/4

S2 2030 3/4

S2 1

SHT 5 19

DR TO AUX. BLDG SUMP.

S.C. 8999B 10-G42

S2 263 10

S2 2501 2

SHT 4 19 MISC. EQUIP. DRAIN TK. 0-1

8989A 2-T58

8989B 2-T58

8991 2-T58

S2 2513 1

S2 2652 12

S2 3/4

3/4-T58

S2 3/4

LOCAL SAMPLE

8992 3-GM42FB

S2 2509 3

S2 3/4

3/4-T58

T.C.

8993 3/4-T58

S2 3/4

8994A 3-GM42FB

8994B 3-GM42FB

S2 2510 3

S2 2511 3

S2 2653 12

S.C. 8996 2-T58

A.UX.BLDG SUMP

SHT 5 19

3-L EL 85'-0"

S2 261 12

REFUELING WATER STORAGE TANK 61.2

188-D

SYSTEM NO. 09, 23

REF. DWG. 106712 REV. 3 SH. 2

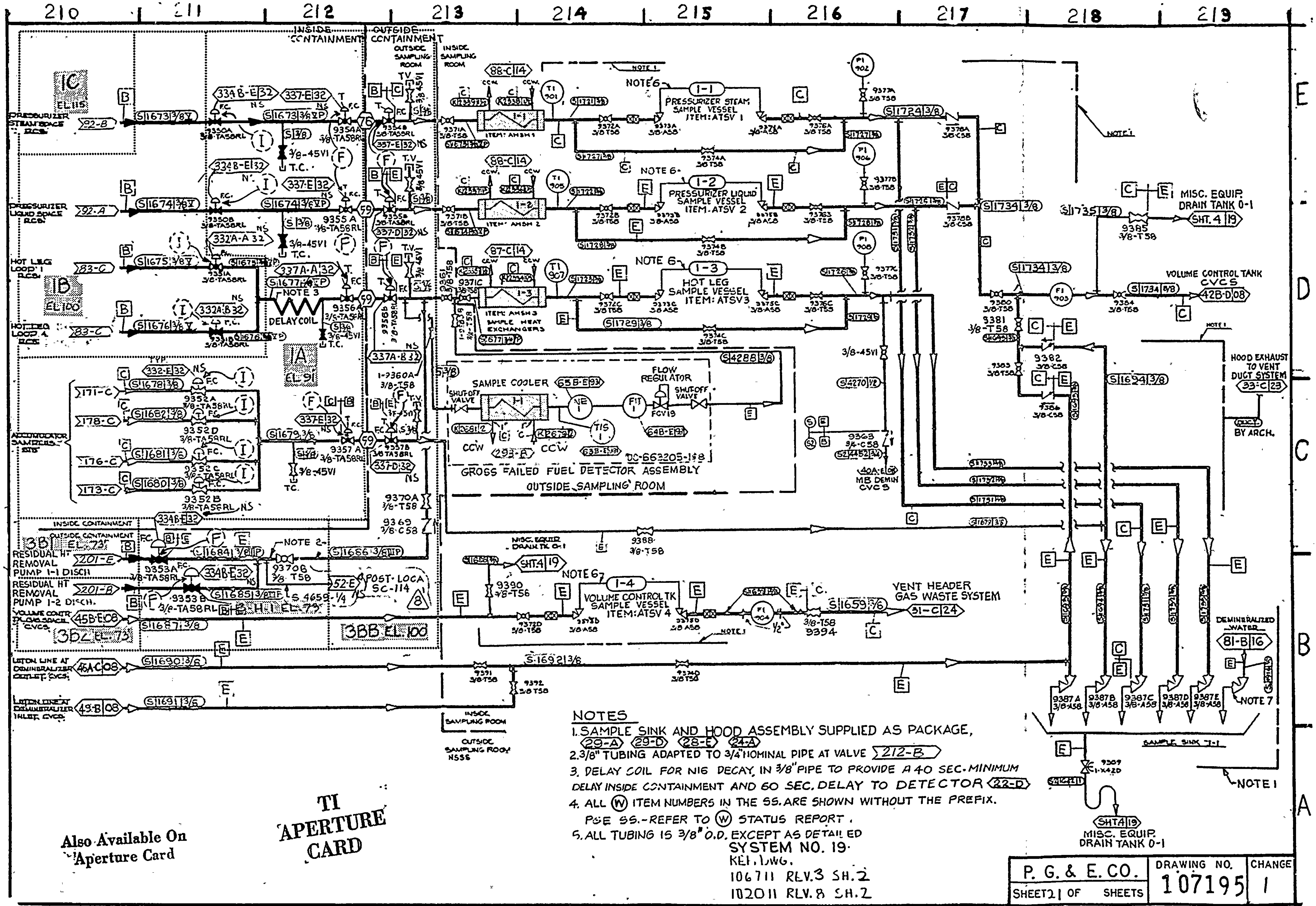
REF. DWG. 102012 REV. 7 SH 3

REF. DWG. DC-663076-(2)[21]

P. G. & E. CO.	DRAWING NO.	CHANGE
SHEET 22 OF SHEETS	107195	1

RM INDEXED REV. 1

8405100106-35



NOTES

1. SAMPLE SINK AND HOOD ASSEMBLY SUPPLIED AS PACKAGE, 29-A 29-D 28-E 24-A
2. 3/8" TUBING ADAPTED TO 3/4" NOMINAL PIPE AT VALVE 212-B
3. DELAY COIL FOR N16 DECAY, IN 3/8" PIPE TO PROVIDE A 40 SEC. MINIMUM DELAY INSIDE CONTAINMENT AND 60 SEC. DELAY TO DETECTOR 22-D
4. ALL (W) ITEM NUMBERS IN THE SS. ARE SHOWN WITHOUT THE PREFIX. PGE SS.-REFER TO (W) STATUS REPORT.
5. ALL TUBING IS 3/8" O.D. EXCEPT AS DETAILED

SYSTEM NO. 19
REF. DWG.
106711 REV.3 SH.2
102011 REV.8 SH.2

P. G. & E. CO.	DRAWING NO.	CHANGE
SHEET 21 OF SHEETS	107195	1

TI APERTURE CARD

Also Available On Aperture Card

RM INDEXED REV. 1

8405100106 -34

240 241 242 243 244 245 246 247 248 249

3-J-1 EL. 73

3-J-2 EL. 73

COMPONENT COOLING WATER PUMPS

DC-663213-(1) [2]

3-J-3 EL. 73

3BB EL. 85'

VITAL SERVICE HEADER "A"

VITAL SERVICE HEADER "B"

MISC. SERVICE HEADER "C"

CHEMICAL ADD TANKS

DC-663013-(1) [3]

COMPONENT COOLING WATER HEAT EXCHANGERS

DC 663212-(1) [3]

14-E EL. 85

14-A EL. 85

TURBINE BLDG.

AUXILIARY BLDG.

TURBINE & AUX. BLDG. WALL

TOP OF 8C & 8B1 ON 171'

3-BB EL. 85'

VENT TO ATM.

AUX. BLDG SUMP, O-1

3BB EL. 85'

COMPONENT COOLING WATER SURGE TANK

DC-663225-2

UNIT 1 ONLY

UNIT 2 INSTR. TAG NO. IS : LI-138

3BB EL. 100

DEMIN. WTR. MAKE-UP

3BB EL. 115'

3BB EL. 140'

RADIATION & LOCAL SAMPLE TAPS TYP.

RETURN HEADER "B"

RETURN HEADER "C"

RETURN HEADER "A"

POST-LOCA SAMPLING SYSTEM COOLERS

UNIT 2 INSTR. TAG NO. IS LI-136

START-UP STRAINER TYP. - 3 PLCS.

ITEM 1 [4]

CCW PPS. STUFFING BOX & LD. CLRS. RETURN

FCV-606

FCV-607

FCV-608

FCV-430

FCV-355 ITEM 25

FCV-431

LCV-70

LCV-69

RCV 16

RV-45 3"x4"

RV-186 3/4"x1"

TI APERTURE CARD

SYSTEM NO. 20

REL. DWG.
10671A REV. 2 SH. 2
10201A REV. 10 SH. 5

Also Available On Aperture Card

P.G.&E.CO.

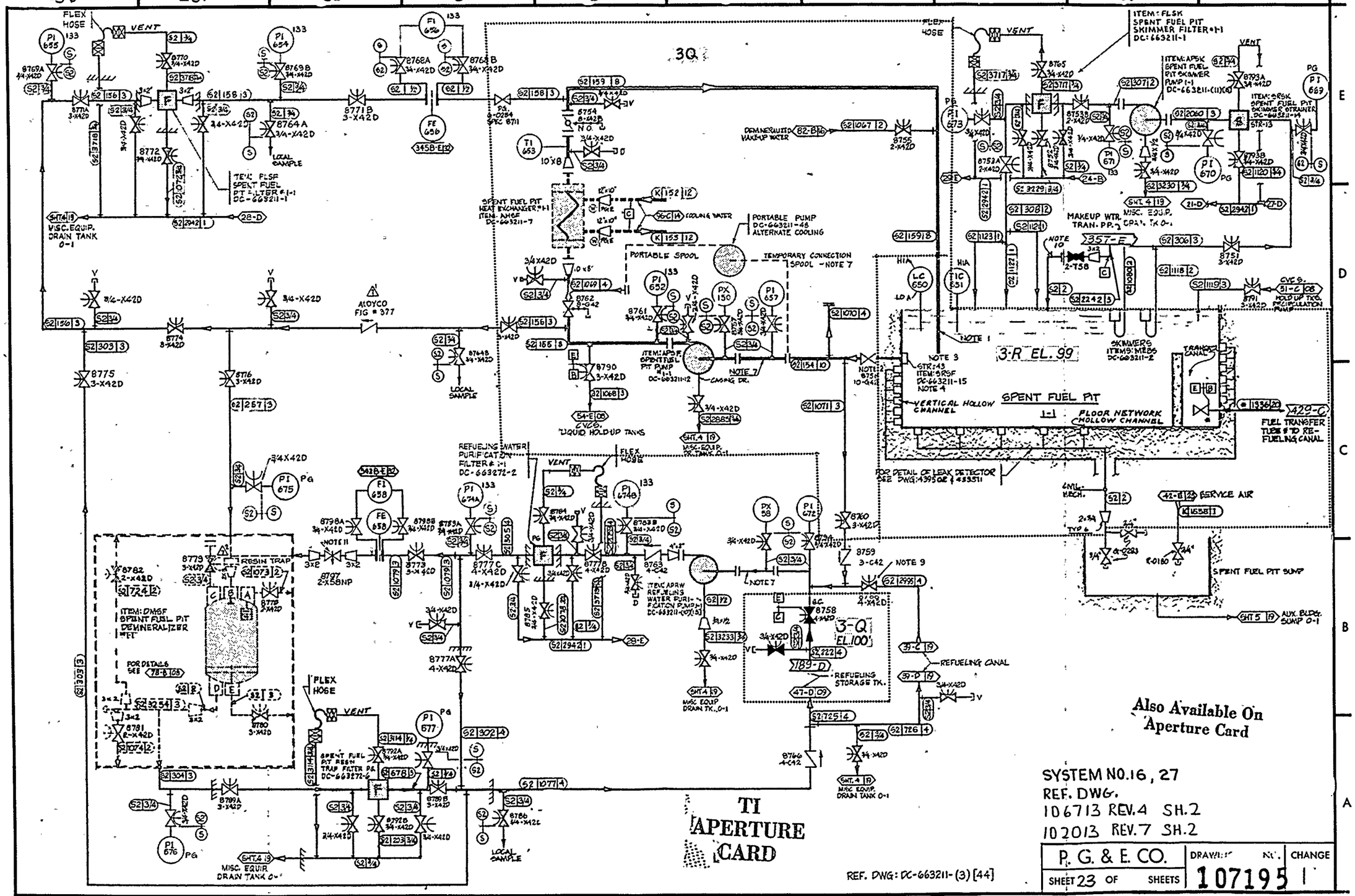
SHEET NO. 24 OF SHEETS

DRAWING NUMBER 107195

CHANGE 1

RM INDEXED REV. 3.

8405100106-37



260 261 262 263 264 265 266 267 268 269

E D C B A

249-E K103 20 VITAL SERVICE SUPPLY HEADER "A" 270-E

38B EL. 85'

K2277 20 MISC. SERVICE SUPPLY HEADER "C"

249-D K104 20 VITAL SERVICE SUPPLY HEADER "B" 270-D

378-E 32 NS (I) FE 46 249-D [42] (11) D

42 D [31] K2131 2 39 K2129 2 39 K2129 2 39

3-J-3 EL. 73'

3-J-2 EL. 73'

K1886 1½ K1777 1½ K1765 1½

K2851 1½ K1823 1½ K2393 1½

K2136 ¾ K2137 ¾ K1856 ¾ K1857 ¾ K1860 ¾ K1883 ¾

40 NOTE 1 TYP. PX 405 PX 407 PX 409

42 42 42 42 42 42

LUBE OIL COOLER TYP DC-663213-4

3-J-1 EL. 73'

CCW PP 1-1 CCW PP 1-2 CCW PP 1-3

1-1 1-2 1-3

LO-DP 81-E 20 NS LO-DP 81-E 20 NS LO-DP 81-E 20 NS

STUFFING BOX STUFFING BOX STUFFING BOX

PX 406 PX 408 PX 410

51 51 51 51 51 51

3-J-2 EL. 73'

K1854 ¾ K1855 ¾ K1858 ¾ K1859 ¾ K1884 ¾ K1885 ¾

K2252 1½ K1824 1½ K2398 1½

FI 301 FI 302 FI 303

49 49 49

2" R-0180 NOTE 2 3 2" NOTE 2 2" NOTE 2

TO RETURN HEADER "B" 3-J3 EL. 73'

K1887 1½ K1792 1½ K1766 1½

TO RETURN HEADER "A"

241-C K2133 2 39 39 K2132 2 39 39 K2132 2 242-C

K82 20 RETURN HEADER "B" (11) [42] D

249-A K2282 20 RETURN HEADER "C" 270-B

3BB EL. 85'

249-A 270-B

249-A K81 20 RETURN HEADER "A" 270-A

Also Available On Aperture Card

3-J-3 EL. 73'

ATI APERTURE CARD

COMPONENT COOLING WATER PUMPS COOLING REQUIREMENTS

DC-663213 (1) [2]

REF. DWG. 106714 REV. 1 SH. 3; 102014 REV. 9 SH. 5A

SYSTEM NO. 20

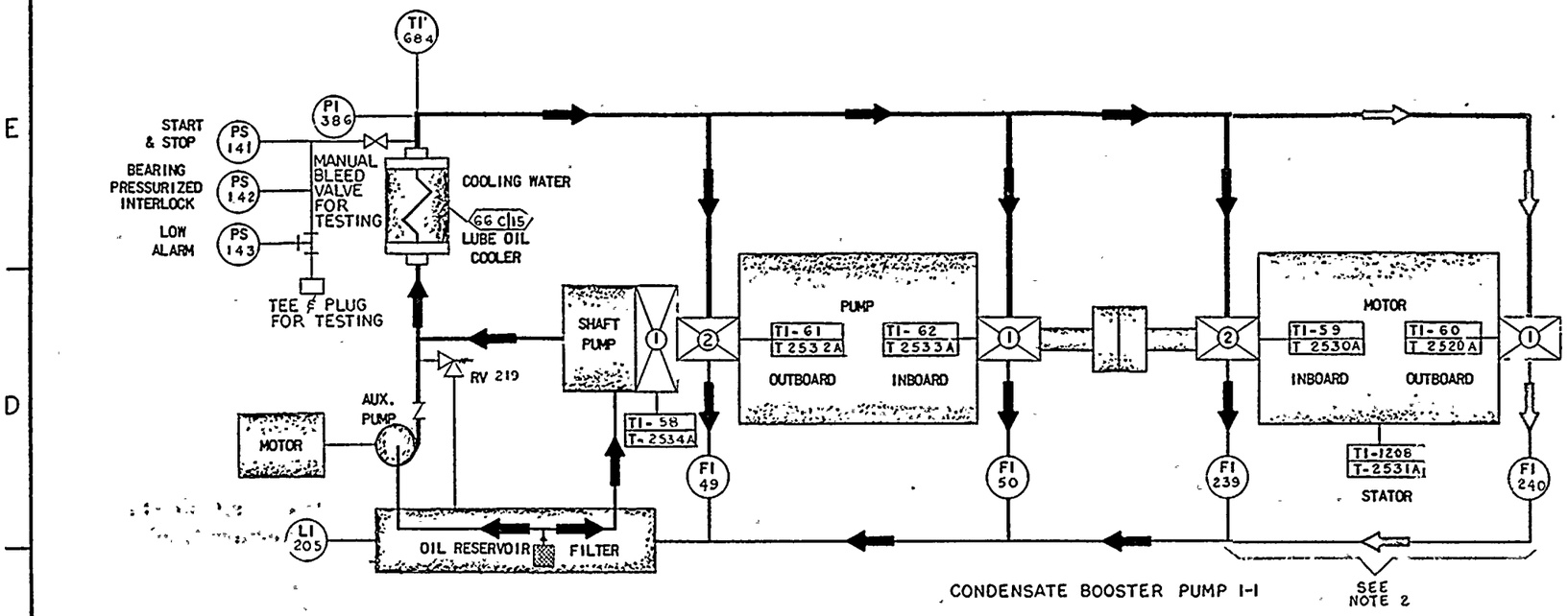
NOTES:

1. PXS TO BE LOCATED WITHIN 1' OF HEAT EXCHANGER 53A-D
2. LOCATE FLANGE FOR EASY CONNECTION OF TEMPORARY VALVE AND PRESSURE TEST GAGE. REPLACE WITH BLIND FLANGE AFTER TEST 53A-B
3. VALVE IS NON-CLASS I. 2" BALL VALVE WITH 2" FLANGE AT ONE END AND 2" MALE NIPPLE AT OTHER END. ONLY ONE VALVE WILL BE USED AT SEVERAL TEST POINTS, REMOVE VALVE PRIOR TO OPERATION, SYS. IS CLASS I 53A-B

(3. CONT.)

P.G.&E.CO.	SHEET NO. 26 OF SHEETS	CHANGE
	DRAWING NUMBER 107195	1

8405100106-39



LUBE OIL PUMP SYSTEM		LUBE OIL COOLER WATER SUPPLY CROSS REF. COOR-SCHEM. 1020 XX	OIL RESEV. LEVEL	AUXILIARY LUBE OIL PUMP: RELIEF VALVE	AUXILIARY LUBE OIL PUMP: START & STOP	AUXILIARY LUBE OIL PUMP: INTRL. PRESSURIZE BRGS. BEFORE ROLLING	HEADER: PRESSURE: LO ALARM	HEADER: PRESSURE: INDIC.	HEADER: TEMP.: XCH'GR OUT	DISTRIBUTION & RETURN SYSTEM: PUMP: BEARING: BRG. METAL: 1 THRUST	BRG. METAL: 2 OUTBOARD	BRG. METAL: 1 INBOARD	BRG. OIL RETURN: 2 OUTBRD.	BRG. OIL RETURN: 1 INBOARD	BRG. OIL RETURN: 2 INBOARD	BRG. OIL RETURN: 1 OUTBRD.	DISTRIBUTION & RETURN SYSTEM: MOTOR: BRG. METAL: 2 INBOARD	BRG. METAL: 1 OUTBRD.	STATOR
			LI	RV	PS	PS	PS	PI	TI	TEMP. INDIC. COMPUTER POINT = TIXXXX TXXXXA			FI						TEMP. INDIC. COMPUTER POINT = TIXXXX TXXXXA
COMPONENT COOLING WATER DC 663213-4	1-1	53A-C-14	201	233	322	244	321	859	1256	1257/0640	1258/0639	1259/0638	245	246	SELF-LUBRICATED BEARING SEE NOTE NO. 2		1269/0637	1268/0636	1024/0641
	1-2	54A-C-14	202	234	324	245	323	860	1260	1261/0646	1262/0645	1263/0644	247	248			1271/0643	1270/0642	1025/0647
	1-3	57A-C-14	203	235	326	246	325	861	1264	1265/0652	1266/0651	1267/0650	249	250			1273/0649	1272/0648	1026/0653
HEATER 2 DRAIN TANK DC 663043-1		55-C-15	204	218	138	139	140	385	683	NONE	57/2433	56/2434	47	45			55/2431	54/2430	1232/2432
CONDENSATE BOOSTER DC 663046-16	1-1	66-C-15	205	219	141	142	143	386	684	58/2534	61/2532	62/2533	49	50	239	240	59/2530	60/2529	1238/2531
	1-2	67-C-15	206	220	144	145	146	387	685	63/2540	66/2538	67/2539	51	52	241	242	64/2536	65/2535	1244/2537
	1-3	69-C-15	207	221	147	148	149	388	686	68/2546	71/2544	72/2545	53	54	243	244	69/2542	70/2541	1250/2543

NOTES 1. ALL INSTRUMENTS ARE FURNISHED BY THE EQUIPMENT VENDOR.

2. COMPONENT COOLING WATER PUMP MOTORS AND HEATER 2 DRAIN TANK PUMP MOTOR ARE EQUIPPED WITH BEARING AUTOMATIC OILERS.

SYSTEM NO. 20

REFERENCE DWG. 102020 REV 8 SH 8

P. G. & E. CO.	DRAWING NO.	CHANGE
SHEET 25 OF SHEETS	107195	

270 271 272 273 274 275 276 277 278 279

E D C B A

K|103|20 VITAL SERVICE SUPPLY HEADER "A"

269-E 280-E

3BB EL 85'

269-E K|2277|20 MISC. SERVICE SUPPLY HEADER "C" 280-E

TI APERTURE CARD

269-D K|104|20 K|105|18 VITAL SERVICE SUPPLY HEADER "B"

K|94|12 11 D UNIT 1 ONLY

K|100|1½ 3-B-2 91'-0" 3-H-1 93'9" 29 DC-663319-8 40 V 51

NOTE 1 (1) FI 85 358A-E 32 18" RHR 202-C NS 3 4 CC 18" 42 ½ D DC-663319-8

TX 201 NS UNIT 1 ONLY V 11 RV 47 K|34 352A-A 32 FCV-364 29 F

58-C 19 NS AUX. BLDG SUMP, C-1 K|1670|¾ D 11 UNIT 1 ONLY FI 82 49

UNIT 2 ONLY 3-X 93'9" V 51 K|122|1½ D 42 3-H-1 93'-9"

K|99|12 K|106|18

K|82|20 269-B 3-B-1 93'-9"

K|2356|2 39 D UNIT-2 ONLY [42] 3-X EL 91' V 11 K|3274|1 K|3273|2 161-E 3-H-1 75'-3"

PX-426 E D 42 39 D 4¾ 41 L.O. CLR NOTE 2 168-C

CVCS 163-A SYSTEM 1 L.O., GEAR OIL, SEAL PLATE CLRS 1-2 SYSTEM 2 SEAL CLRS 1-2A, 1-2B

PX-427 E D [42] (11) 48 161-E D 42 50 168-B

K|3276|2 K|3275|1 CENTRIFUGAL CHARG PP 1-2 PACKAGE 144-A

K|2357|2 FI 261 2" NOTE 4 3X EL 91' [51] V (11) 39

RETURN HEADER "B"

K|310|2 39 CONTAINMENT WALL

PX-428 E V [51] (11) 41 K|2259|1 K|1926|1 41

K|2221|¾ SEAL CLRS K|2082|¾ W.T.R. K|1½ NOTE 3

K|1927|1 50 K|2222|¾ K|2220|¾

PX-429 D [42] (11) 50 K|2261|1 50 3-X 87'-0"

FI 83 K|311|2 2" NOTE 4 S I FULL OPEN ON "S" SIGNAL 362A-A 32 NS K|2369|18

FCV-360 NS 618-E 35 I TC 20 I 27 27 TCV-27

3BB 85'-0"

150-LB. FLG. TYP. - 6 PLCS. TYP. K K2 3

K|3279|12 K|3282|12 K|3283|12 C B

3 10 D K2|314|12 K2|317|12 K2|318|12 TYP.

13 10 9

I-A 129' 13.5 V VACS 1 OF 12 CLG. COILS TYP V 13.5 K2|3167|2 SP. 8.1 S.O 13.2 I-3 I-5 K2|3168|2

K2|3165|2 S.O 8.1 [10] D VACS S.O 13.2 I-2 K2|3166|2 INSIDE CONTAINMENT OUTSIDE CONTAINMENT

K2|3163|2 [10] D S.O 8.1 MOTOR H.X. TYP. S.O 13.2 [10] D I-1 K2|3164|2 I-A 129'

I-C 140'

18 15 14

K2|319|12 K2|322|12 K2|323|12

FE 74 375A-B 32 NS FE 71 375A-B 32 NS FE 70 375A-B 32 NS

TI 817 TI 818 TI 819 10 D TYP. K2 K 3

K|3284|12 K|3287|12 K|3288|12 TYP. B C

K|106|18

K|82|20 269-B 3-B-1 93'-9"

RETURN HEADER "C" 3BB EL 85 K|2282|20 280-B

269-B

269-A RETURN HEADER "A" K|81|20 280-A

Also Available On Aperture Card

RESIDUAL H.X. 1-2	RES. HEAT REM.	CENTRIFUGAL CHARGING	SAFETY INJECTION PP 1-1	REACTOR CONTAINMENT FAN COOLERS
DC-663217-4	PP 1-2 SEAL WTR. CLR. DC-663217-9,16	PUMP 1-2 PACKAGE CLRS. DC-663210-40, 47, 48, 49, 50	COOLER DC-663216-26, 32	REF. DWG. 106714 REV. 2 SH. 4; 102014 REV. 10 SH. 6; SYSTEM NO. 20 — DC-663079-1, 2 CLG. COILS 5, 9 FAN MTRS. H.X.

NOTES:

1. ELBOW TAPS FOR FLOW INDICATION. 60-D
2. REFER TO S.I.S. PUMP LUBE OIL COOLING SYSTEM, PG&E RECORD NO. DC-663216-26 65-C
3. REFER TO SIS. PP. SEAL FLUSH SYSTEM DIAGRAM, PG&E RECORD NO. DC-663216-27 66-C

HEADER "B" COMPONENTS

4. TEST POINT, SEE NOTES 2&3 SHT-5A COORD C3-B.

P.G.&E.CO.	SHEET NO. 27 OF SHEETS	
	DRAWING NUMBER 107195	CHANGE 1

8405100106 - 40

AS MOD REV

AS MFM REC

280 | 281 | 282 | 283 | 284 | 285 | 286 | 287 | 288 | 289

E D C B A

K|103|20 VITAL SERVICE SUPPLY HEADER "A"

279-E 290-E

3BB EL.85

Also Available On Aperture Card

279-E K|2277|20 MISC. SERVICE SUPPLY HEADER "C" 290-E

3-J-3 EL. 73 K|2286|3

3C EL.60'

WASTE GAS COMP. 1-1 SEAL WATER MAKE-UP

GWS 332-D NS

RV-302 3/4"X1"

(10) [42] D K|2688|3/4

GWS 33-D|24 NS TX 202

K|2288|2 K|2289|2

39 1½" 1-1 1½" 48

WASTE GAS COMP. 0-1 SEAL WATER MAKE-UP

3-C EL.60 39 332-C GWS NS

K|2287|2 RV-303 3/4"X1" K|3281

K|2689|3/4 GWS 33-C|24 NS TX 203 K|2162

K|1602 1½" 0-1 1½" K|2291|2 48

39 48 42 D

K|2287|2 K|2291|2

FROM UNIT 2 SERVICE SUPPLY HEADER "C"

TO UNIT 2 3C EL.60' RETURN HDR. "C"

3J-3 EL. 73' K|2290|3

3-L EL85

39 D [42] (11) K|3249|2

SAMPLE PANEL 1-1 PACKAGE

CENTRAL SAMPLE PANEL 1-1 COOLERS -9-

ANALYSIS INST. SYS. 59-E|31 NS

TX 216 RV-191 3/4"X1

39 3BB EL85

K|3266|2 K|1

K|3

TI APERTURE CARD

34 42 D

(11) V [51]

K|2292|3

3-L 85'-0"

K|2394|2 K|2294|1½

39 [42] D (11) UNIT 1 ONLY 11 V FLUID DRIVE OIL COOLER

40 1" LUBE OIL COOLER

D [42] (11) 11 V

48 3-H-1 80'-0" 49

K|2397|2 K|2295|1½

TX 204 K|2293|3 3X EL 91'-0" 3L EL 85'-0"

[51] (11) V

34

K|2282|20 RETURN HEADER "C"

279-B 290-B

279-A K|81|20 3BB EL85 RETURN HEADER "A" 290-A

WASTE GAS COMPPESSORS 1-1, 0-1 SEAL WATER COOLERS
DC-663274-2

CENTRAL SAMPLE PANEL 1-1 COOLERS
DC-663108-5

RECIPROCATING CHARGING PUMP 1-3 COOLERS
DC-663210-25

REF. DWG.
106714 REV.2 SH.5
102014 REV.10 SH6A

HEADER "C" COMPONENTS

SYSTEM NO. 20

P.G.&E.CO.

SHEET NO. 28 OF SHEETS

DRAWING NUMBER 107195

CHANGE 1

290 | 291 | 292 | 293 | 294 | 295 | 296 | 297 | 298 | 299

289-F
289-E
VITAL SERVICE SUPPLY HEADER "A"
3BB EL 85
300-E
MISC. SERVICE SUPPLY HEADER "C"
3BB EL 100
OUTSIDE CONTAINMENT
INSIDE CONTAINMENT
CONTAINMENT WALL
I-A 100'-0"
I-A
I-B
REACTOR COOLANT PUMPS DC-663207-4 & 6
REACTOR VESSEL SUPPORT COOLERS
OUTSIDE MISSILE BARRIER
BIOLOGICAL SHIELD WALL
INSIDE BIOLOGICAL SHIELD
COOLING PLATE 1-1 (2-4), 1-2 (2-3), 1-3 (2-2), 1-4 (2-1)
UPPER BEARING OIL COOLER
LOWER BEARING OIL COOLER
FLEX CONN TYP
THERMAL BARRIER LABYRINTH SEAL
RV-41
RV-42
RV-43
RV-44
INSIDE MISSILE BARRIER
OUTSIDE MISSILE BARRIER
MISSILE BARRIER WALL
CNT. SUMP, 0-1
TO CNT. SUMP 0-1 TYP.
RV-51 3"x4"
RV-307
RV-309
RV-311
RV-313
T1-1147 TO 620A
T1-1148 TO 621A
T1-1149 TO 622A
T1-1150 TO 623A
6" DIA. X 9" LG. SPOOL UNIT 1
6" DIA. X 9" LG. SPOOL
6" DIA. X 9" LG. SPOOL UNIT 1 ONLY
6" DIA. X 9" LG. SPOOL
FCV-354
FCV-749
FCV-750
FCV-363 NS
FCV-337
293-B
293-E
GROSS FAILED FUEL DETECTOR SAMPLE COOLER DC-663205-8, 9
213-C
RV-192 ¾"X1"
HEADER "C" COMPONENTS
289-B
RETURN HEADER "C"
RETURN HEADER "A"
3BB EL 85
300-B
300-A
289-A

SUPPORT COOLER TYP.
REACTOR
BIOLOGICAL SHIELD WALL
MISSILE BARRIER

PHYSICAL ARRANGEMENT OF REACTOR VESSEL SUPPORT COOLERS
CONNECT INLETS & OUTLETS TO SCHEMATIC AT LEFT.
REF. DWGS. 500177/438273

NOTE
1. REACTOR COOLANT PUMP 1-2 HAS SHORT PIPE (K-3) BETWEEN UPPER BEARING OIL COOLER OUTLET NOZZLE NO. 4 AND LINE NUMBER 2304. RCP 1-2 ONLY. 70-D

SYSTEM NO. 20
REF. DWG.
106714 REV. 2 SH. 6
102014 REV. 10 SH. 7

P. G. & E. CO.	DRAWING NO.	CHANGE
SHEET 29 OF SHEETS	107195	1

TI APERTURE CARD

Also Available On Aperture Card

RM INDEXED REV. 1

8405100106-42

VITAL SERVICE HEADER "A" K|103|20

298-E 310-E

3BB EL 85'

MISC. SERVICE HEADER "C" K|2278|18

298-E 310-E

K|148|10 30 ROOT K|148|10 K|2207|10 30 K|148|10 UNIT 2 SUPPLY

K|1759|6 K|2312|8 K|3930|1 K|3037|3 K|1501|8 K|1440|1 K|3267|2

K|1761|2 K|1763|4 K|1764|4 K|1762|2 K|1760|6 K|3764|1 K|2341|8 K|149|10

3L EL 85'

B.A. EVAP. PACKAGE DISTILLATE COOLER

CVCS 59C-C|08 NS CVCS 56C-D|08 NS CVCS 56C-E|08 NS

B.A. EVAP. CONDENSER VENT COND.

RV-304 3/4 X 1" FCV 307 NOTE 1 2638-A|32 NS

52C-B|08 NS 3C EL 73 43-B|06 NS K|3480|3 K|3481|3 K|3765|1 K|3038|3IIP UNIT 2

RV-305 3/4 X 1" 451-A-A|32 NS FCV-1307 NOTE 1 K|1768|6

3L EL 85'

WASTE CONC. PACKAGE DISTILLATE COOLER L-WS 78-B|19 NS L-WS 77-D|19 NS L-WS 78-E|19 NS EVAP. COND. VENT COND.

K|1767|6 K|1775|4 K|1769|2 K|1773|2 K|1776|4 K|1441|1 K|1518 K|149|10 K|1951|10

72-B|19 NS 3C EL 48' UNIT 2 RETURN

3X EL 91'

HOT LEG 1" LOOP HX. NSS

PRESSURIZER STM. HX. 24-E|11 NSS

PRESSURIZER LIQ. SPACE H.X. NSS 24-D|11

K|2324|1½ K|2336|1½ K|2338|1½ K|1½ FUTURE

K|2335|1½ K|2337|1½ K|2339|1½

RV-194 RV-187 RV-188 K|3/4 (TYP.) K|1" (TYP.) FUTURE K|1½

K|3266|2

RETURN HEADER "C"

298-A 310-B

RETURN HEADER "A" 3BB EL 85' K|2281|18 K|81|20

298-A 310-A

BORIC ACID EVAPORATOR PACKAGE COOLERS DC-663210-62 WESTINGHOUSE

AUX. STEAM DRAIN RECEIVER VENT COND. DC-663273-8

WASTE CONCENTRATOR PACKAGE COOLERS DC-663273-4 WESTINGHOUSE

NSSS SAMPLE HEAT EXCHANGER DC-663214-1

NOTE:
1. VALVE PLACED OUTSIDE EVAPORATOR AREA DUE TO HIGH RADIATION LEVEL. 80-B

HEADER "C" COMPONENTS

SYSTEM NO. 20

REF. DWG. 106714 REV. 1 SH. 7
102014 REV. 10 SH. 8

P.G.&E.CO

SHEET NO. 30 OF SHEETS
DRAWING NUMBER 107195
CHANGE 1

VITAL SERVICE SUPPLY HEADER "A"

K 103 20 — 309-E — 320-E

3BB EL 85

MISC SERVICE SUPPLY HEADER "C"

309-E — K 2278 18 — K 2279 12 — K 144 4

3BB EL 100

3-L 89'-0"

3-Q 100'

UNIT 1, UNIT 2

OUTSIDE CONTAINMENT

IB EL 91'-0"

IA 91'-0"

INSIDE CONTAINMENT

3BB 100'-0"

CVCS

SFS

SPEC 8725

SPEC 8729

TCV-130

RV-49

RV-189

RV-55

RV-52

FCV-361

T.V. & V.

TC

TYP

ABOVE 3BB EL 140

BLOWDOWN TK VENT

CONDENSER (FOR RE-27)

RETURN HEADER "C"

309-B — K 2281 18

RETURN HEADER "A"

309-A — K 81 20 — 320-A — K 81 20

SEAL WATER HEAT EXCHANGER
DC-663210-7

LETDOWN HEAT EXCHANGER
DC-663210-11

STEAM GENERATOR BLOWDOWN SAMPLE COOLERS FOR RADIATION MONITORS
DC-663095-(1) [3]

SPENT FUEL PIT HEAT EXCHANGER
DC-663211-7

EXCESS LETDOWN HEAT EXCHANGER
DC-663210-12

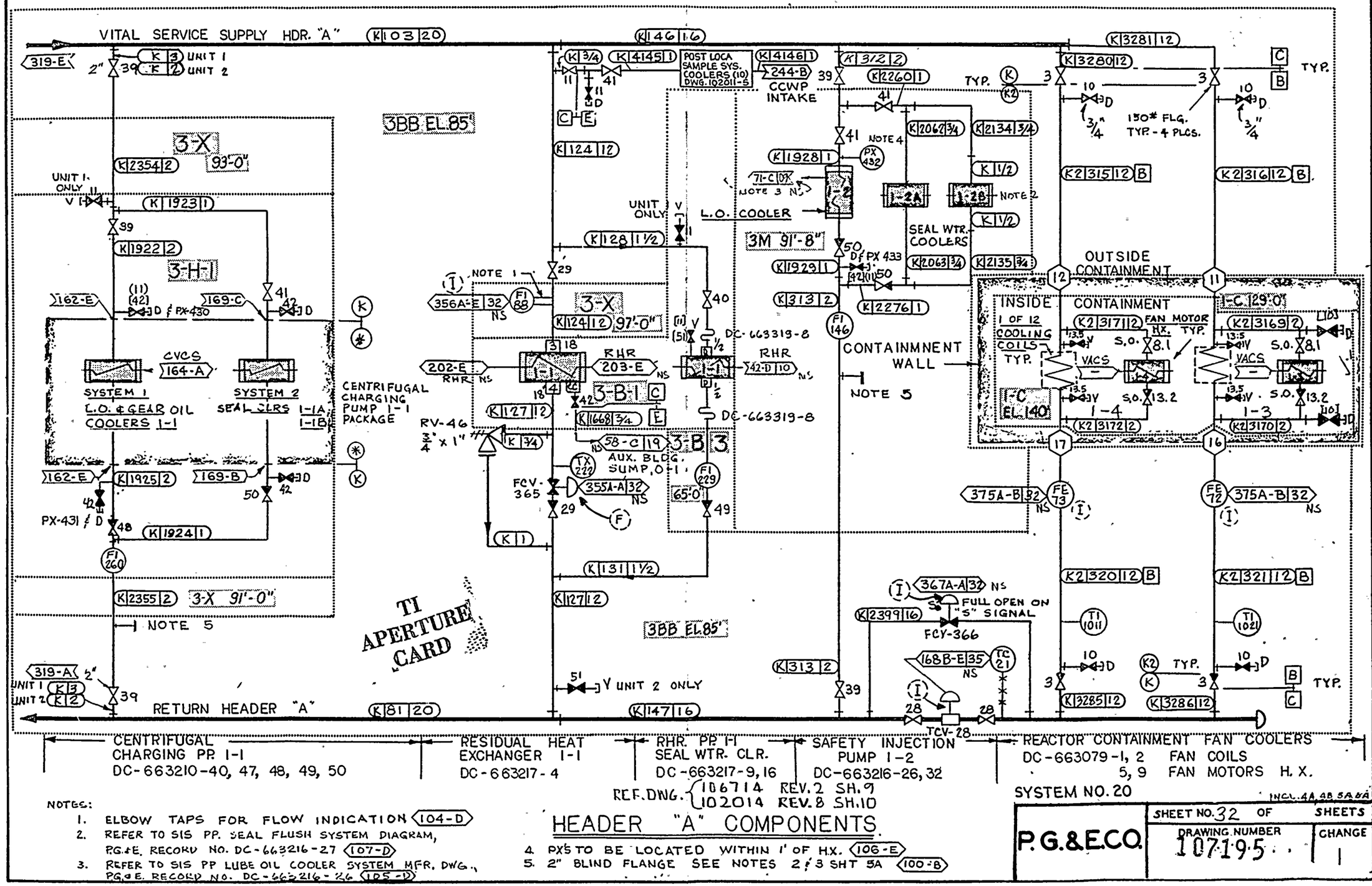
Also Available On Aperture Card

HEADER "C" COMPONENTS

SYSTEM NO. 20
REF. DWG.
106714 REV. 2 SH. 2
102014 REV. 10 SH. 9

P.G.&E.CO.

SHEET NO. 31 OF SHEETS
DRAWING NUMBER 107195
CHANGE 1



RM INDEXED REV 1

35 MM MICRO

CONDENSATE STORAGE TANK (1-1) 425,000 GAL

MAIN CONDENSER

PACKAGED BOILER FEED PPS. SUCTION

UNIT 2 COND. STG. TK. 2-1

VENT

OUTSIDE 3R EL. 115'

SAMPLE

AUX. FW PP RECIRC. HDR

3I EL. 100'

TO PLANT YARD DRAIN NORMAL OPERATION

AUX. FW PUMP SUCTION

EVAP. DISTILLATE

FCV 724

PCV 91

TRANSFER COMPARTMENT 150,000 GAL

FIRE WATER COMPARTMENT SEE 37-E 18 300,000 GAL.

FIRE WATER TRANSFER TANK 0-1

CIVIL DWG. A38038 A38039

FROM EVAP. DISTILLATE WTR SUPPLY -211e-

FROM UNIT 2

TO FIRE WTR STG. TANK C-1

SPEC. 1166

LOCAL SAMPLE- V-0673

TO PLANT YARD DRAIN

UNIT-1 ONLY
UNIT-2 ONLY

UNIT-2 CNDS STG TANK

UNIT 2 CONDENSATE STORAGE TANK

AUX FWP TURB BRG CLRS

DEMINERALIZER OUTLET

FIRE WTR YARD LOOP & FIRE WTR. STG. TK.

F.W. STG. TK. K1770 C

CCS UNIT 2

CCS SURGE TANK

RAW WATER OPEN RESV.

BLDG. AUX. SUMP

STM. GEN BLOWDOWN CLEAN UP SYSTEM

NOTE 3

NOTE 4. MAKE-UP WTR. TRANSFER PPS. DC:663062-3

ITEM 26 DC-663323-1

ITEM 30 DC-663323-1

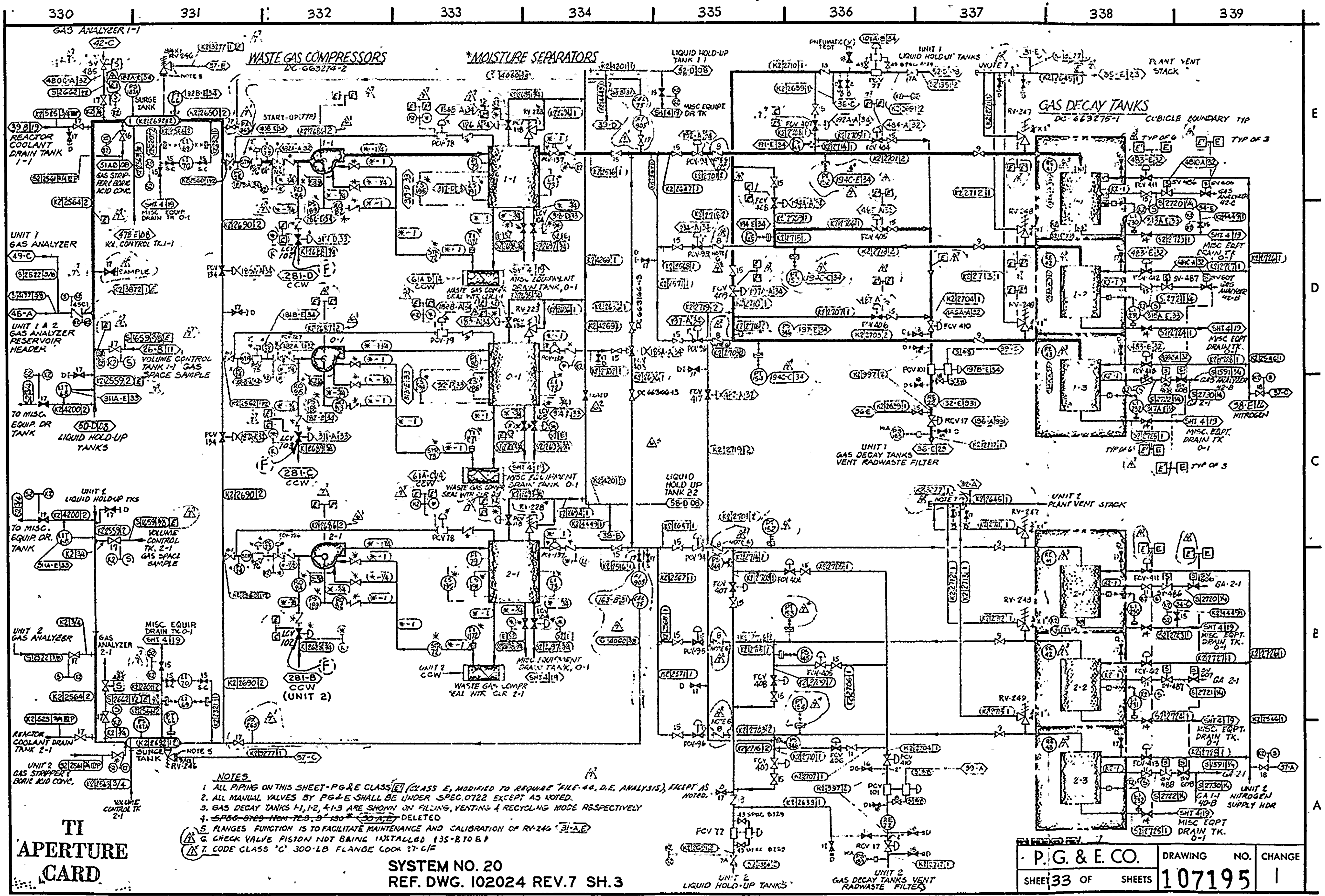
TI APERTURE CARD

SYSTEM NO. 01, 21
REF. DWG.
107616 REV. 1 SH. 8
102016 REV. 9 SH. 7

P.G.&E.CO.
35 M/M Neg.

SHEET NO. 34 OF SHEETS
DRAWING NUMBER 107195
CHANGE 1

8405100106-47



NOTES

1. ALL PIPING ON THIS SHEET - PG&E CLASS E' (CLASS E, MODIFIED TO REQUIRE "FILE-44, D.E. ANALYSIS), EXCEPT AS NOTED.
2. ALL MANUAL VALVES BY PG&E SHALL BE UNDER SPEC. 0722 EXCEPT AS NOTED.
3. GAS DECAY TANKS 1-1, 1-2, & 1-3 ARE SHOWN ON FILLING, VENTING & RECYCLING MODE RESPECTIVELY
4. ~~SPEC. 0729 ITEM 72.9, 3" 150# (30-A,E)~~ DELETED
5. FLANGES FUNCTION IS TO FACILITATE MAINTENANCE AND CALIBRATION OF RV-246 (31-A,E)
6. CHECK VALVE PISTON NOT BEING INSTALLED (35-B TO E)
7. CODE CLASS 'C' 300-LB FLANGE COOK 37-C/E

SYSTEM NO. 20
REF. DWG. 102024 REV.7 SH.3

P.G. & E. CO.	DRAWING NO.	CHANGE
SHEET 33 OF SHEETS	107195	1

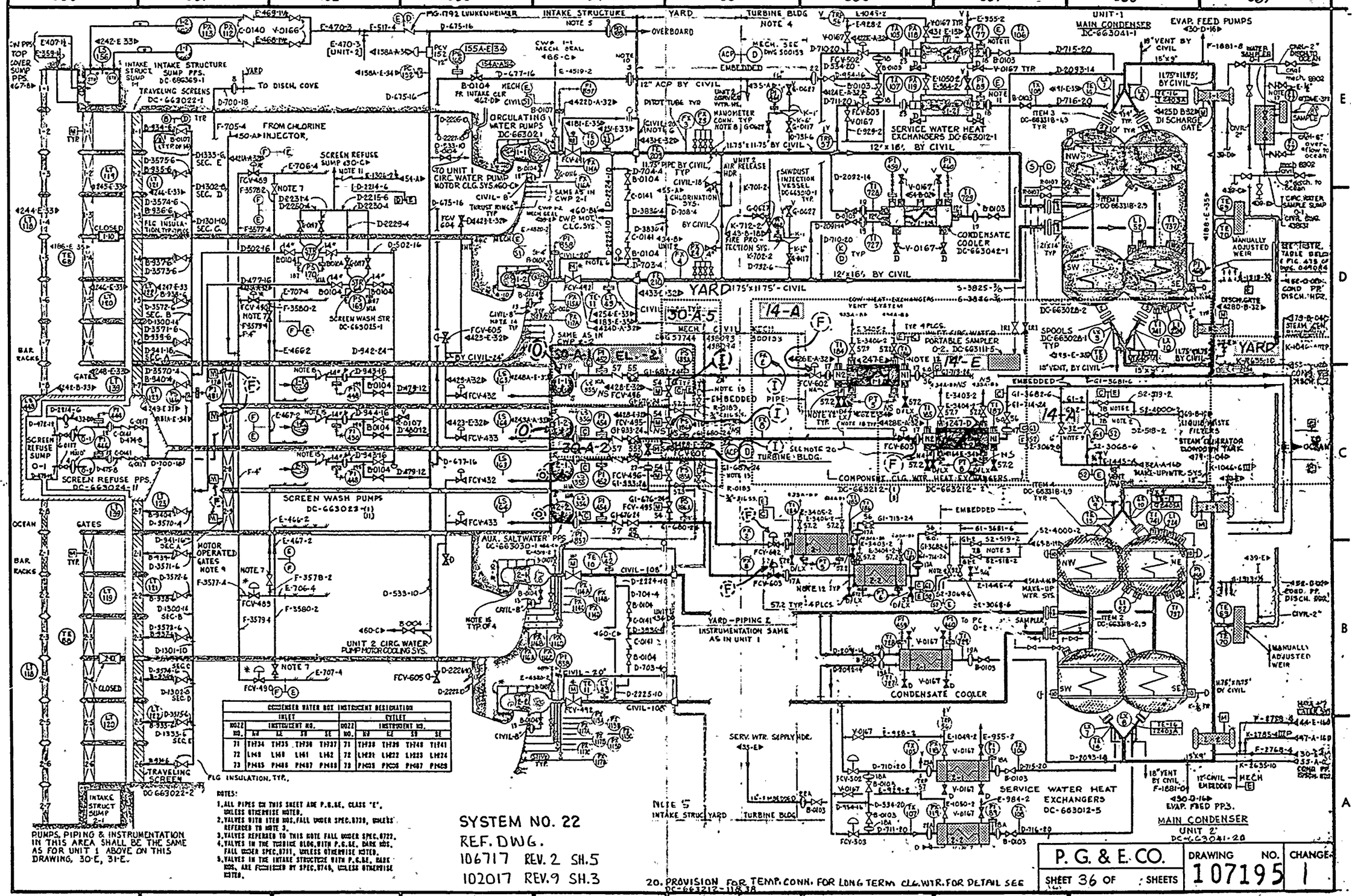
TI APERTURE CARD

RM INDEXED REV. 1

35 MM REC. 71

8405100106-46

Also Available On Aperture Card



Also Available On Aperture Card

350 351 352 353 354 355 356 357 358 359

E D C B A

SPENT FUEL PIT-SFS-

ITEM 63

-CCS- SURGE TK. MAKE-UP

3BB EL. 103

-CCS- SURGE TK MAKE-UP

CONCENTRATES FILTER FLUSH

CONCENTRATES HOLDING TANK TRANSFER PUMPS 54A-C 08

3-Q-1 EL. 100

343-A TRANSFER PP. DISCH.

-CVCS- MONITOR TANK PUMPS DISCH. 69-D 08

PRIMARY WATER MAKE-UP PUMPS DC: 663062-(5) DC: 663062-[32]

TO SPENT & REFUELING FLTS AREA

TO CASK DECONTAM. AREA

TO CAUSTIC DAY PUMP 0-1 OUTLET 60-A

HYDRAZINE ADDITION

TYP. 4 NOZZLES

VENT

FILL TAP

DIAPHRAGM 1 (1-1) SEALED PRIMARY WTR. STOR. TK. 200,000 GAL. NOTE 4 663071-(77) 663071-(86)

6" MISSION DUO-CHECK. FIG. 15. 150# STD. CM E STYLE B

RECIRC.

NOTE 3 TO PLANT YARD DRAIN NORMAL OPERATION

LOCAL SAMPLE

BY-PASS

SAMP. CONN. UNIT 1 ONLY

-CVCS- BLENDER & CHEMICAL MIXING TANK 42B-B 08

-CVCS- BORIC ACID TRANSFER PUMPS 52B-B 08

SPENT RESIN TRANSFER SYSTEM 77-E 08

DRUMMING STA. 76-B 19

W.C.H.T. LOOP SEAL FILL

C.H.T. LOOP SEAL FILL 56A-D 08

FR. UNIT 2

TO FLT. RADWASTE RM. FOR MAINT.

DEMIN REGEN. DR. PUMPS 66A-B 19

BORIC ACID EVAP. SYSTEM 1-1 -CVCS-

BORIC ACID EVAP. SYSTEM 2-1 -CVCS-

-CVCS- RADWASTE EVAP. SYS. 0-1

B.A. TANK DR FUNNEL

B.A. TK. LOOP SEAL FILL

B.A. BATCH TK. DR. FUNNEL, UNIT 2 ONLY

-CVCS- FILL TANK

SERVICE WTR. FOR MAINTENANCE

RCS PRES RELIEF TK. RCS PPs SEAL STANDPIPE

SERVICE WTR. HEAD TANK 1-1 MAKE-UP

SPENT FUEL PIT SFS

UNIT-1 ONLY HOT WTR TK DIST. DEMINERALIZER 120-D

AUX BLDG SUMP SHT-5 19

TO INCORE CHILLER 30-B 23

BLDG. HTG. DR. RECEIVER 0-1 58-B 06

BORON CONC. MEASUREMENT 47A-B 08

SAMP. SINK 1-1 29-B 11

SAMP. SINK 1-2 31-C 11

BATCHING TANK 0-1 55B-C 08

TO CHEM. LAB. INST. REPAIR RM. ARCH. MECH.

DEMIN. OUTLET

TO UNIT 2

-SIS- BORON FLUSH 43-E 09

TO CHARGING PP 1-3 SEAL COOLING TK. 43B-D 08

SEE DWG. 59427

SYSTEM NO. 21

REF. DWG.

106716 REV. 1 SH. 9

102016 REV. 9 SH. 8

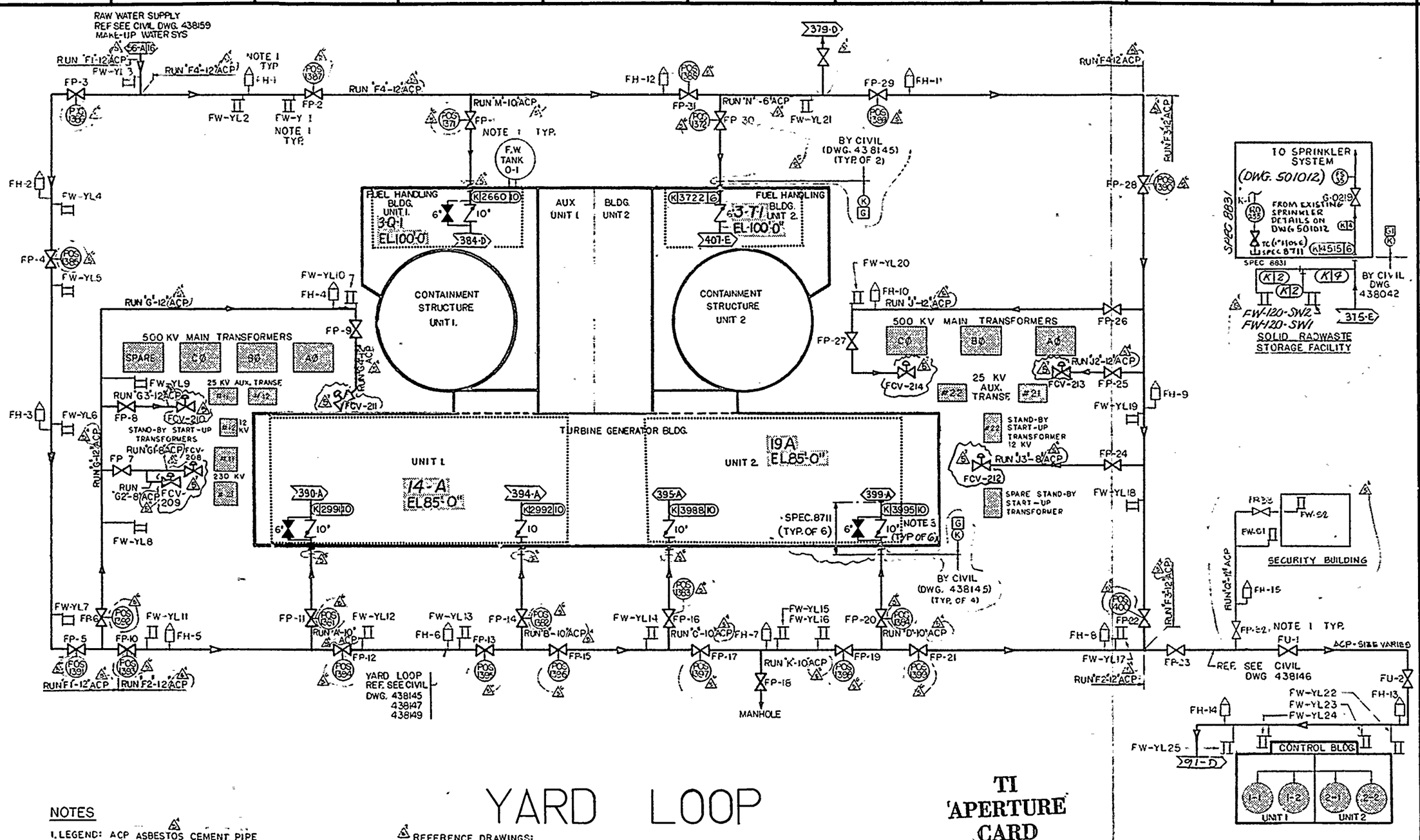
P.G.&E.CO.

35 M/M Mod. 1

SHEET NO. 35 OF SHEETS

DRAWING NUMBER 107195

CHANGE 1



YARD LOOP

TI 'APERTURE' CARD

Also Available On Aperture Card

NOTES

1. LEGEND: ACP ASBESTOS CEMENT PIPE
   - FIRE HYDRANT: FH (22-E)
   - FIREWATER HOSEREEL: FW (22-E)
   - POST INDICATOR ISOLATION VALVE: FP (23-E)
   - UNDERGROUND VALVE: FU (29-B)
2. ALL OUTDOOR PIPING AND VALVES ON THIS SHEET ARE BY CIVIL UNDER SPEC 8831 EXCEPT TRANS. DELUGE SYSTEMS (FCV 208, 209, 210, 211, 212, 213, & 214) WHICH ARE UNDER SPEC 8724 OR AS NOTED MECH PIPING AND VALVES.

REFERENCE DRAWINGS: (TRANSFORMER DELUGE SYSTEM) DC-663086-67-71 & 78

NOTES (CONT.)

3. CHECK-VALVES ARE CRANE 150#, 147-½. GATE VALVES ARE CRANE 150#, 47-½.

SYSTEM NO. 28

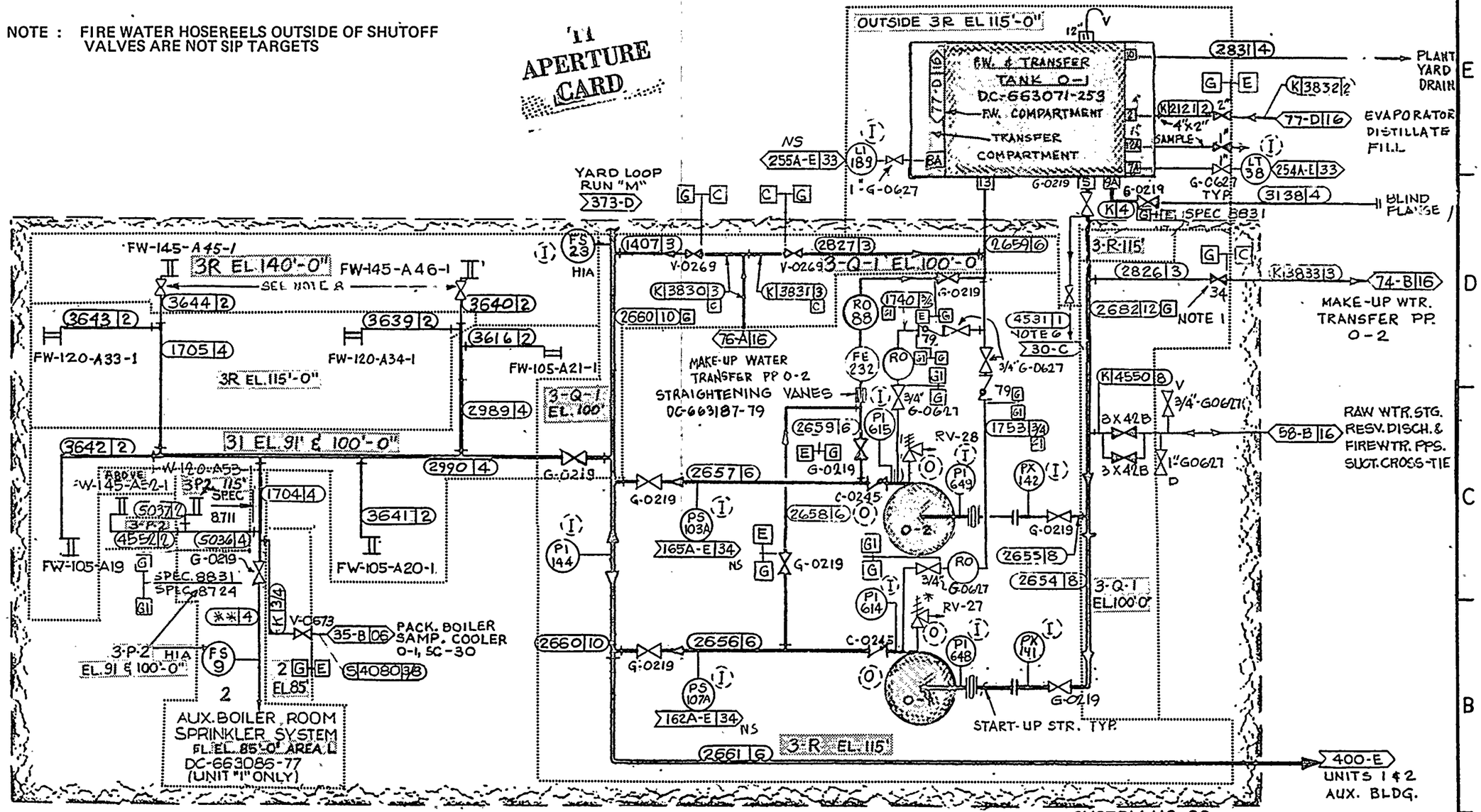
REF. DWG.
106718 REV. 1 SH. 2
102018 REV. 6 SH. 2

P. G. & E. CO.		
SHEET 37 OF SHEETS	107195	CHANGE 1

35 M/M

8405100106-50

NOTE : FIRE WATER HOSEREELS OUTSIDE OF SHUTOFF VALVES ARE NOT SIP TARGETS



UNIT 1 FUEL HANDLING BLDG.

NOTES:

1. VALVE IT NOS. 34&79 ARE UNDER SPEC. 8729 AND INSTALLED UNDER SPEC. 8831 388-D
2. ALL PIPING WITH P.G.&E. CLASS "C" & "E" ARE UNDER 8711 EXCEPT AS NOTED.
3. ALL PIPING & VALVES WITH P.G.&E. CLASS "G" & G1 ARE UNDER SPEC. 8831, AND WITH XX INDICATE UNDER SPEC. 8724.
4. ALL PIPING ON THIS SHEET IS PIPING SPEC "K" AND CODE CLASS "G" EXCEPT AS NOTED
8. BONNEY FORGE 2" SW GATE VALVE CAT # HCW-108 (BODY A-105, SEAT/STEM/DISC-13 CR. WP 800, TEMP. 850°F) CODE D. 391/393-D 35 M/M Neg.

Also Available On Aperture Card

P.G.&E.CO.	SHEET NO. 38 OF SHEETS	
	DRAWING NUMBER 107195	CHANGE 1

8405100106-5/

390 391 392 393 394 EAST 395 396 397 398 399

E D C B A

UNIT-1 CONTAINMENT STRUCTURE

410-A

OUTSIDE 16-A EL 104'-0"

UNIT-2 CONTAINMENT STRUCTURE

410A

14-A EL 85'-0"

14-A EL 104'-0"

14-A EL 119'-0"

14-E EL 85'-0"

14-A EL 119'-0"

EAST OUTSIDE 14-D EL 140'-0"

14-D EL 140'-0"

14-A EL 104'-0"

13-E EL 119'-0"

12-C EL 104'-0"

11-D EL 85'-0"

14-D EL 140'-0"

14-A EL 85'-0"

16-A EL 85'-0"

16-A EL 104'-0"

WEST OUTSIDE 17 EL 119'-0"

16-A EL 85'-0"

OUTSIDE 16-A EL 140'-0"

16-A WEST 5-1 EL 140'-0"

4" NH

2½" NH

DIESEL ENGINE DRIVEN PORTABLE FIRE PUMPS (TYP OF 3) DC-663501-3

SEE SH.40 AT 409-B

SEE SH.40 AT 409-B

SEE SH.40 AT 409-B

SEE SH.40 AT 409-B

41A-A

UNIT 1
TURBINE BLDG. AUTOMATIC SPRINKLERS
WET AND DELUGE SYSTEM
SEE SHEET 4A

47A-A

41B-A

UNIT 2
TURBINE BLDG. AUTOMATIC SPRINKLERS
WET AND DELUGE SYSTEM
SEE SHEET 4B

47B-A

SAWDUST INJECTION

TO SAWDUST INJECTORS UNIT-2

BUILDING BOUNDARY

UNIT-1 UNIT-2

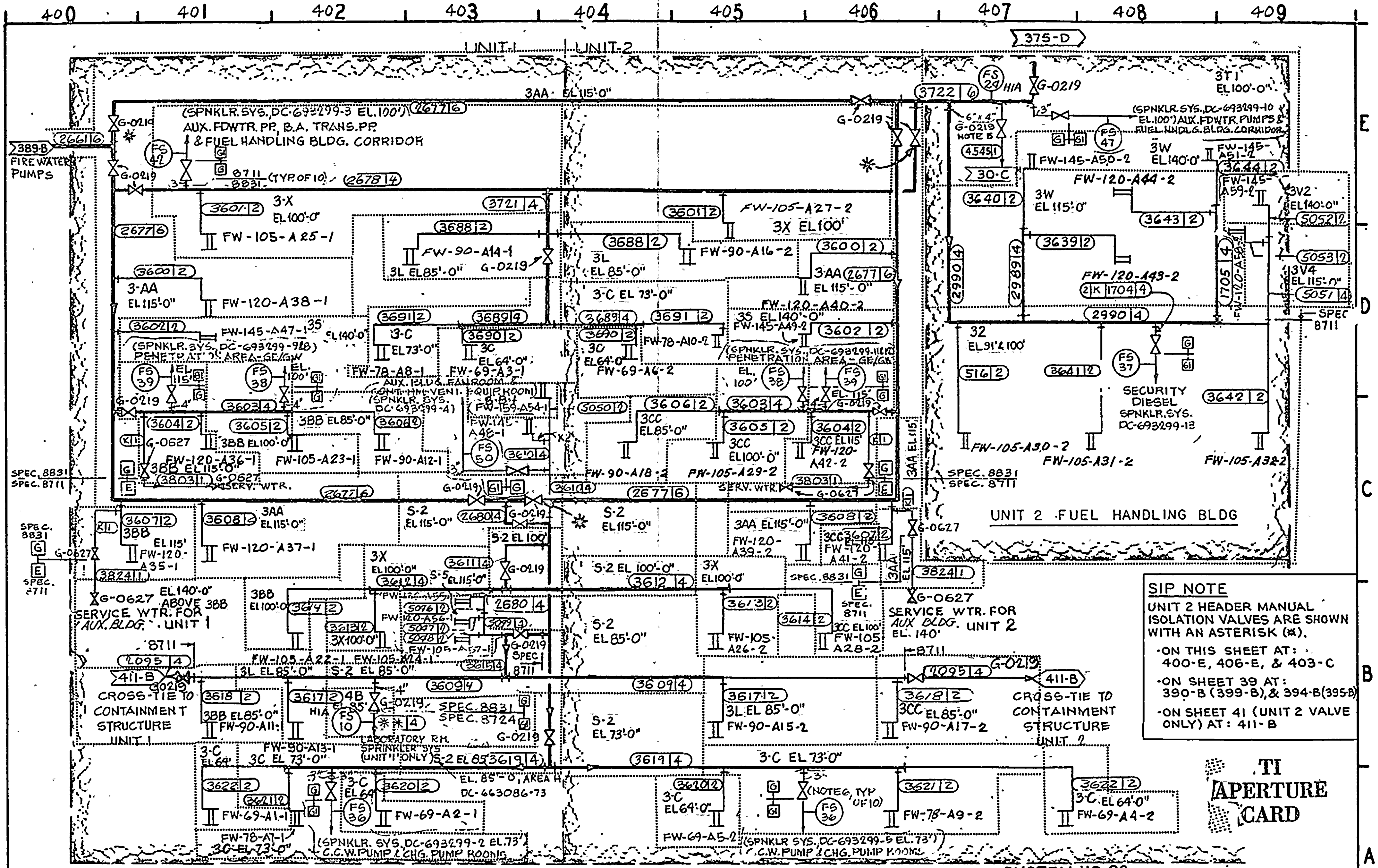
NOTES

1. ALL PIPING ON THIS SHEET IS UNDER SPEC. 8831 AND PG&E CLASS "G" EXCEPT AS NOTED. UNLESS OTHERWISE NOTED, PIPING INSIDE TURBINE BUILDING IS SPEC "K"
2. PIPING WITH DOUBLE ASTERISKS ARE UNDER SPEC. 8724
3. 2½" NATIONAL HOSE THREADED CONNECTION (CAPPED) FOR PORTABLE DIESEL ENGINE DRIVEN FIRE PUMPS, SPEC. 8711. CHECK VALVES ARE LUNKENHEIMER MODEL NO. 157 3C. (42-B) (43-B) (45-D) (46-B) (47-B)

TURBINE BUILDING

SYSTEM NO. 28
REF. DWG.
106718 REV. 1 SH. 4
102018 REV. 5 SH. 4

P.G. & E. CO.	DRAWING NO.	CHANGE
SHEET 39 OF SHEETS	107195	1



TI APERTURE CARD

35 M/M

NOTES:

1. ALL PIPING & VALVES ON THIS SHEET ARE SUPPLIED & INSTALLED UNDER SPEC 8831, EXCEPT AS NOTED.
2. ** INDICATES PIPING & VALVES UNDER SPEC. 8724
3. DELETED
4. ALL PIPING ON THIS SHEET HAVE SPEC. "K" EXCEPT AS NOTED

UNITS 1 & 2 AUXILIARY BUILDING

REF. DWG. 106718 REV. 1 SH.6 / 102018 REV.5 SH.5

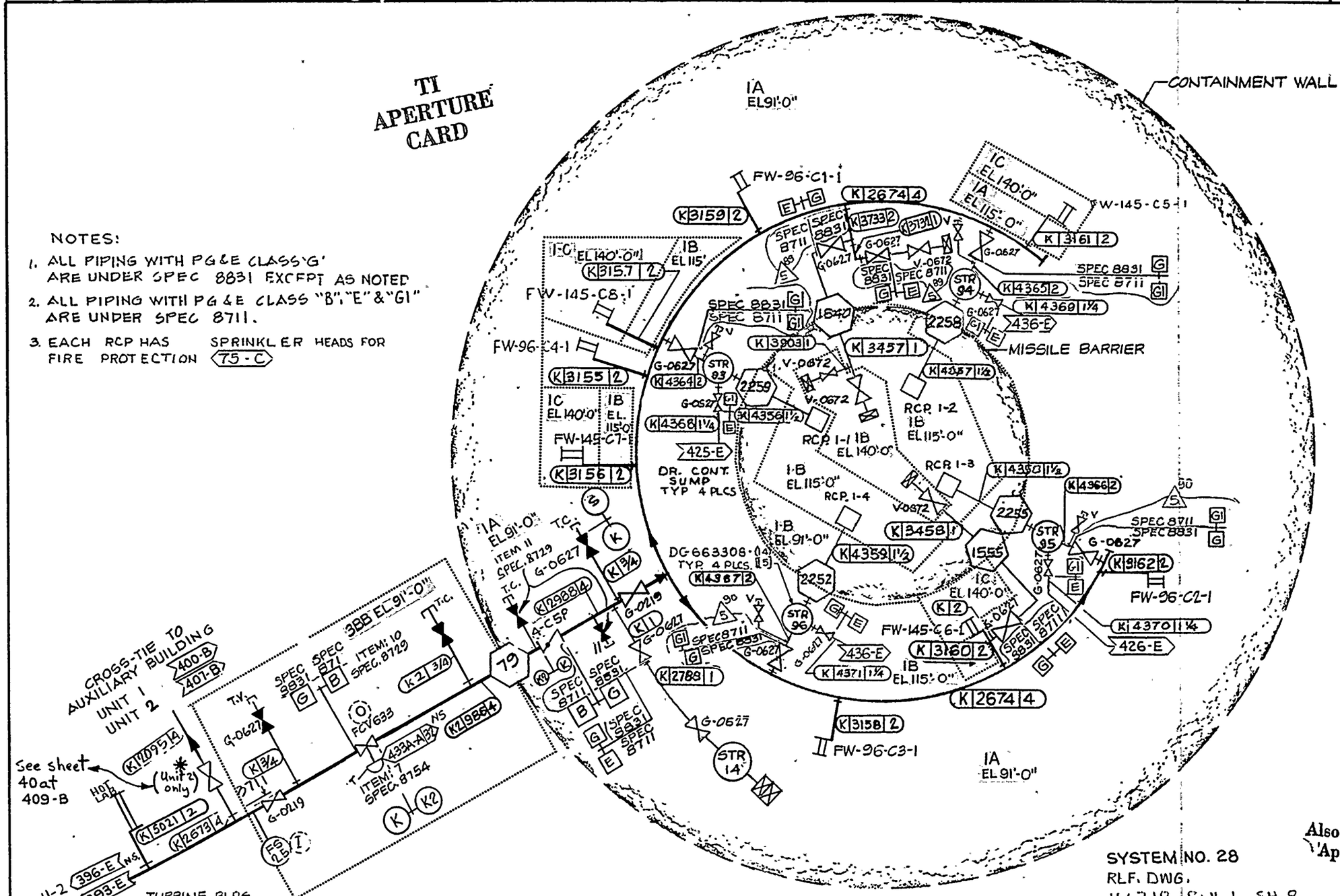
SYSTEM NO. 28

P.G.& E.CO.	SHEET NO. 40 OF SHEETS	
	DRAWING NUMBER 107195	CHANGE 1

8405100106-53

NOTES:

1. ALL PIPING WITH PG&E CLASS 'G' ARE UNDER SPEC 8831 EXCEPT AS NOTED
2. ALL PIPING WITH PG&E CLASS "B", "E" & "GI" ARE UNDER SPEC 8711.
3. EACH RCP HAS SPRINKLER HEADS FOR FIRE PROTECTION <75-C>



UNIT 1 CONTAINMENT STRUCTURE

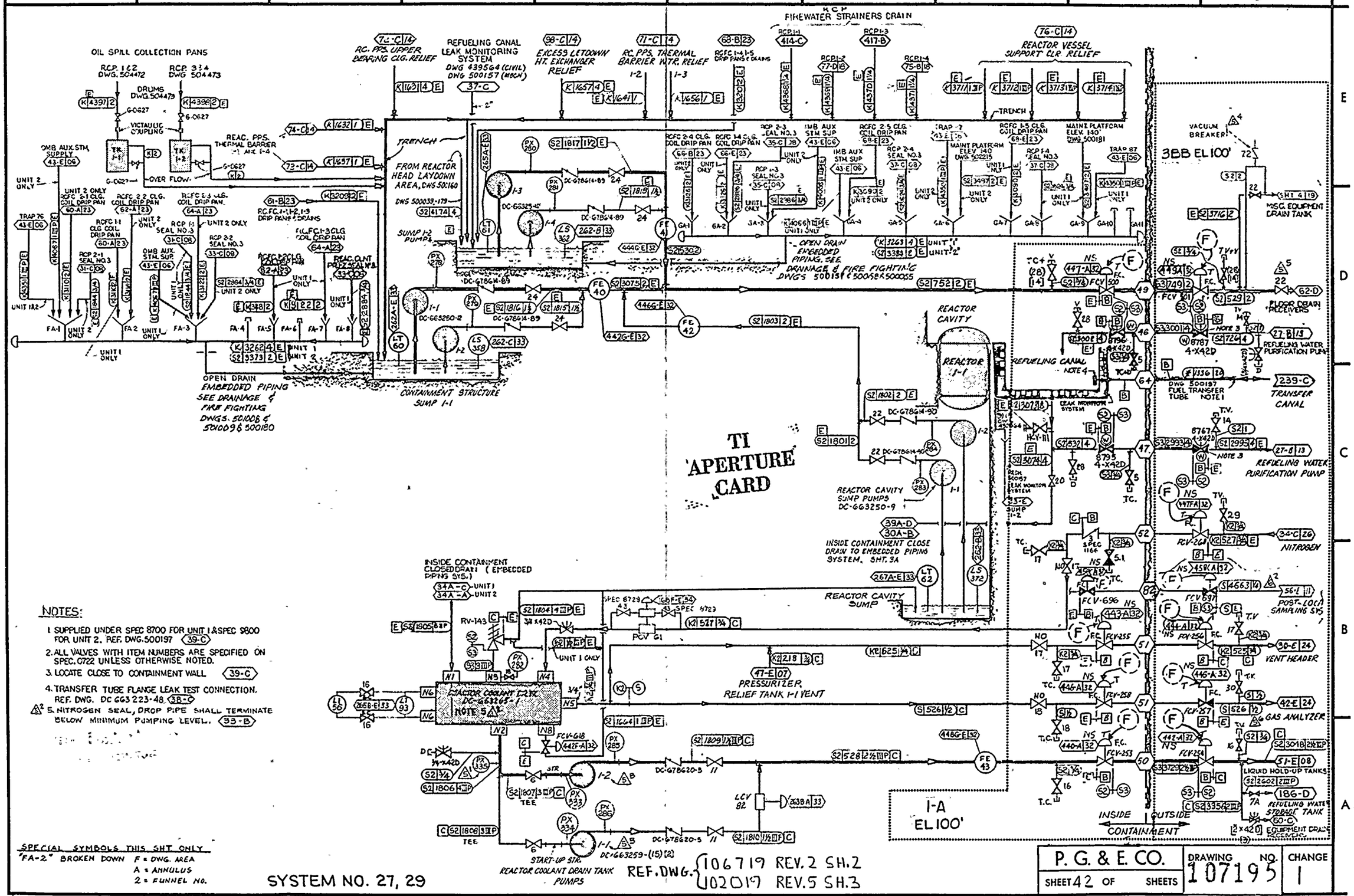
UNIT 2 SIMILAR EXCEPT LAST DIGIT ON HOSEREEL DESIGNATION IS "-2"

Also Available On Aperture Card

SYSTEM NO. 28
REF. DWG.
106718 REV. 1 SH. 8
102018 REV. 5 SH. 7

P.G.&E.CO.	SHEET NO. 41 OF SHEETS	
	DRAWING NUMBER 107195	CHANGE 1

8405100106-54



NOTES:

1. SUPPLIED UNDER SPEC 8700 FOR UNIT 1 & SPEC 9800 FOR UNIT 2. REF. DWG. 500197 (39-C)
2. ALL VALVES WITH ITEM NUMBERS ARE SPECIFIED ON SPEC. 0722 UNLESS OTHERWISE NOTED.
3. LOCATE CLOSE TO CONTAINMENT WALL (39-C)
4. TRANSFER TUBE FLANGE LEAK TEST CONNECTION. REF. DWG. DC GG3 223-48 (38-C)
5. NITROGEN SEAL, DROP PIPE SHALL TERMINATE BELOW MINIMUM PUMPING LEVEL. (33-B)

SPECIAL SYMBOLS THIS SHT ONLY
"FA-2" BROKEN DOWN F = DWG. AREA
A = ANNULUS
2 = FUNNEL NO.

SYSTEM NO. 27, 29

REF. DWG. 106719 REV. 2 SH. 2
102019 REV. 5 SH. 3

P. G. & E. CO.	DRAWING NO.	CHANGE
SHEET 42 OF SHEETS	107195	1

35 M/M 17

Also Available On Aperture Card

8405100106 -55

430 431 432 433 434 435 436 437 438 439

CIVIL DWGS. | MECHANICAL DWGS.

NOTE 2
PORTABLE CENTRIFUGE FOR WATER REMOVAL (TYPICAL OF 2)
FILL & DIP STICK
HIA LS 458
LOA LS 457
VENT RUN "E"
0-1
40,000 GALS.
NOTE 7
NOTE 6
PUMP VAULT 1 BOUNDARY
INSULATING FLANGE 4 PLACES
RUN "J"
PUMP VAULT
3x2½
J 3091 2½
RV-216 1½"x3"
J 1½
PX 268
PI 592
PI 595
PI 594
STR 67
DC-663319-7
DC-663319-6
DC-663087-2,3
FLANGE CONN. LOCATED ON TOP OF VAULT 1
J 2745 2
J 2598 2
2½x2
J 2584 2
NOTE 5
J 2582 2½
J 2583 2
J 2580 2½
4x2½
PUMP VAULT 2 BOUNDARY
PUMP VAULT
FILL & DIP STICK
HIA LS 460
LOA LS 459
VENT RUN "F"
0-2
40,000 GALS.
NOTE 7
NOTE 6
3x2½
J 3092 2½
RV-217 1½"x3"
PI 593
PI 596
PI 597
PX 269
STR 68
DC-663319-7
DC-663319-6
DC-663087-2,3
J 2746 2
J 2599 2
J 2581 2½
RUN "K"
UNDERGROUND DIESEL F.O. STORAGE TANKS DWG. 438135
DIESEL FUEL OIL TRANSFER PUMPS DC-663083-1
DIESEL F.O. TRANSFER FILTERS DC-663009-2
UNDERGROUND (INSIDE TRENCH)
UNIT 1
UNIT 2
2½"x2"
J 4538 2
J 4533 2½
J 4535 2
J 4536 2½
J 4537 2½
J 4534 2½
OUTSIDE TURBINE BLDG
TYPICAL ALL TANKS
NS 297-B33
NS 298-B33
VENT TO OUTSIDE OF BUILDING
J 2589 2
J 2591 2
J 2597 2
J 2588 2
J 2590 2
J 2596 2
J 2592 2
11-A-2
11-B-2
11-C-2
11-C-1
22-A-2
22-A-1
22-B-2
22-B-1
LCV-88 1½"
LCV-85 1½"
LCV-86 1½"
LCV-89 1½"
LCV-90 1½"
LCV-87 1½"
LS 202
LS 203
LS 206
LS 207
LS 210
LS 211
K 2191 1½
K 2192 1½
K 2193 1½
PART OF ENGINE-GEN UNIT TYP DC-663082-2
1-1
1-2
1-3
2-1
2-2
DIESEL FUEL OIL DAY TANKS
2½"x2" SEE SHEET 6 FOR ENGINE FUEL OIL SYSTEM DC-663082-4

DIESEL FUEL OIL SYSTEM

NOTES:

1. ALL PIPING ON THIS SYSTEM SHALL BE PG&E CLASS C
2. CIVIL PIPING, SHOWN ON DWGS. 438105, CC & 438134 (REF. RUN E, F, J, & K) 20/21-E
3. ALL VALVE ON THIS SHEET WITH PG&E ITEM NOS, SHALL BE UNDER SPEC. 8729 (DWG. 102039) UNLESS NOTED.
4. DELETED
5. BLIND FLANGE CONN, FOR PUMP OUT & PRIMING. 24-D
6. FOOT VALVE IN SUCTION LINE INSIDE TANK. 21-B/D
7. 1" PIPE FOR SEDIMENT AND WATER REMOVAL. 20-B 20-D

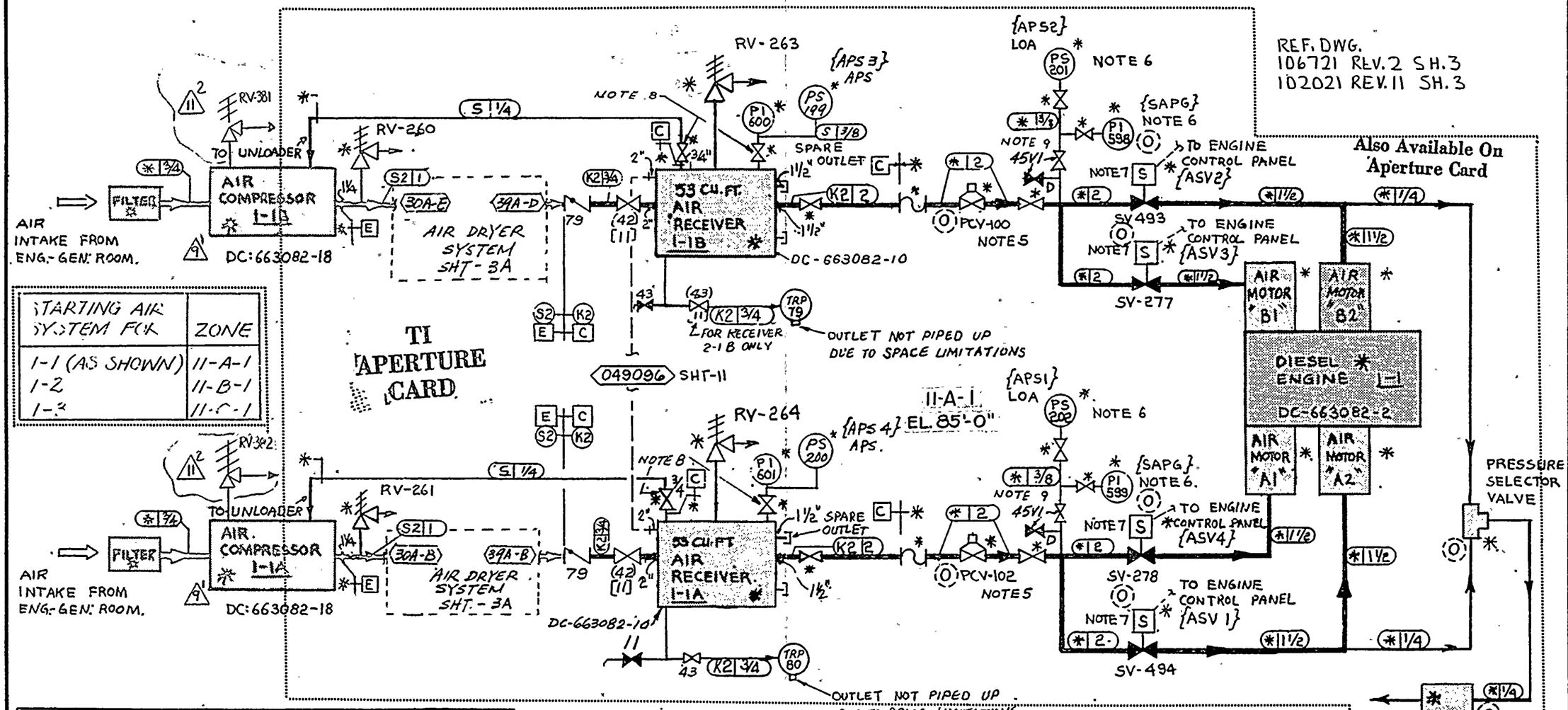
REF. DWG. 106721 REV. 2 SH 2; 102021 REV. 11 SH. 2

SYSTEM NO. 24

P.G.&E.CO.

SHEET NO. 43 OF SHEETS
DRAWING NUMBER 107195
CHANGE 1

35 M/M



STARTING AIR SYSTEM FOR	ZONE
1-1 (AS SHOWN)	II-A-1
1-2	II-B-1
1-3	II-C-1

INSTRUMENT SERVICE		SYM	UNIT 1-1 & 2-2	UNIT 1-2 & 2-1	UNIT 1-3
AIR RECEIVER CONDENSATE TRAP	B	TRP	79	81	83
	A		80	82	84
AIR COMPRESSOR STARTING SWITCH	B	PS	199	209	219
	A		200	210	220
LOW AIR PRESSURE ALARM SWITCH	B		201	211	221
	A		202	212	222
STARTING AIR PRESSURE INDICATOR	B	PI	598	620	640
	A		599	621	641
AIR RECEIVER PRESSURE INDICATOR	B		600	622	633
	A		601	623	634
AIR RECEIVER RELIEF VALVE	B	RV	263	265	272
	A		264	269	273
AIR COMP. DISCH. HEAD RELIEF VALVE	B		381	383	385
	A		382	384	386

INSTRUMENT SERVICE		SYM	UNIT 1-1 & 2-2	UNIT 1-2 & 2-1	UNIT 1-3
START AIR MOTOR PRESS REDUCING VALVES	B	PCV	100	103	105
	A		102	104	106
START AIR MOTOR SOLENOID VALVE	B1	SV	277	281	283
	A1		278	282	284
START AIR MOTOR SOLENOID VALVE	B2		493	495	497
	A2		494	496	498

STARTING AIR SYSTEM

TYPICAL FOR FIVE ENGINE-GEN UNITS
REF DC-663082-5

8 FOR UNIT 2 REPLACE THESE VALVES WITH ITEM 11 SPEC 8729 <-C/E> NS

9. VALVE, TAG, 45V1 SPECS ARE IN DWG 053479 <-C>

NOTES:

1. * DENOTES MANUFACTURER SUPPLIED INSTRUMENTS AND EQUIPMENT
2. FIELD PIPING THIS SYSTEM SHALL BE PG&E CLASS C UNLESS OTHERWISE NOTED.
3. { } MANUFACTURER NUMBER
4. ALL VALVES THIS SHEET, WITH PG&E ITEM NO. SHALL BE UNDER SPEC 8729 (DWG. 102039), UNLESS NOTED.
5. PRESSURE REDUCING VALVE PROVIDED WITH STRAINER <-C/D>
6. MOUNTED ON ENGINE CONTROL PANEL. <-C/D>
7. STARTING AIR SOLENOID VALVES AIR EQUIPPED WITH AN EMERGENCY MANUAL OPENING DEVICE. <-C/D>

SYSTEM NO. 24

P.G.&E.CO.

SHEET NO. 44 OF SHEETS

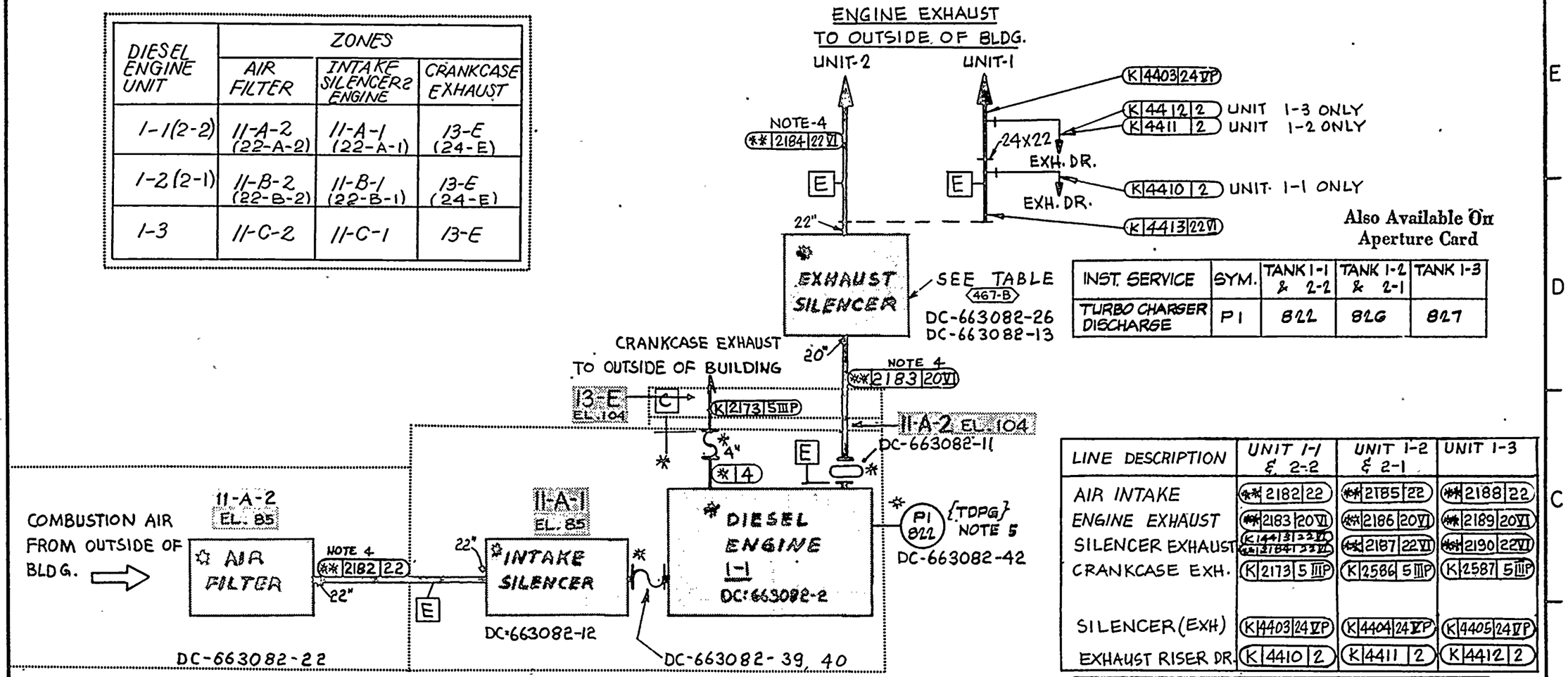
DRAWING NUMBER 107195

CHANGE 1

FOR MODIFIED REV.

460 | 461 | 462 | 463 | 464 | 465 | 466 | 467 | 468 | 469

DIESEL ENGINE UNIT	ZONES		
	AIR FILTER	INTAKE SILENCER2 ENGINE	CRANKCASE EXHAUST
1-1(2-2)	11-A-2 (22-A-2)	11-A-1 (22-A-1)	13-E (24-E)
1-2(2-1)	11-B-2 (22-B-2)	11-B-1 (22-B-1)	13-E (24-E)
1-3	11-C-2	11-C-1	13-E



Also Available On Aperture Card

INST. SERVICE	SYM.	TANK 1-1 & 2-2	TANK 1-2 & 2-1	TANK 1-3
TURBO CHARGER DISCHARGE	P1	822	826	827

LINE DESCRIPTION	UNIT 1-1 & 2-2	UNIT 1-2 & 2-1	UNIT 1-3
AIR INTAKE	** 2182 22	** 2185 22	** 2188 22
ENGINE EXHAUST	** 2183 20 VI	** 2186 20 VI	** 2189 20 VI
SILENCER EXHAUST	(K 1441 3 22 IV) (K 2184 1 22 IV)	** 2187 22 VI	** 2190 22 VI
CRANKCASE EXH.	K 2173 5 IIIP	K 2586 5 IIIP	K 2587 5 IIIP
SILENCER (EXH)	K 4403 24 VP	K 4404 24 VP	K 4405 24 VP
EXHAUST RISER DR.	K 4410 2	K 4411 2	K 4412 2

EXHAUST SILENCERS		
UNIT 1-1/2-2	UNIT 1-2/2-1	UNIT 1-3
RIGHT ANGLE DC-663082-13	STRAIGHT THRU DC-663082-26	STRAIGHT THRU DC-663082-26

COMBUSTION AIR & EXHAUST SYSTEM

TYPICAL FOR FIVE ENG-GEN UNITS

NOTES:

1. ☐ INDICATES PG&E PIPING CLASS
2. * DENOTES MANUFACTURER SUPPLIED INSTRUMENTS & EQUIPMENT
3. {}. MANUFACTURER NUMBER IDENTIFICATION
4. "**" PIPING TO BE INSTALLED UNDER SPEC. 8711, & PROVIDED UNDER DC-663084-1
5. MOUNTED ON ENGINE CONTROL PANEL ⬭

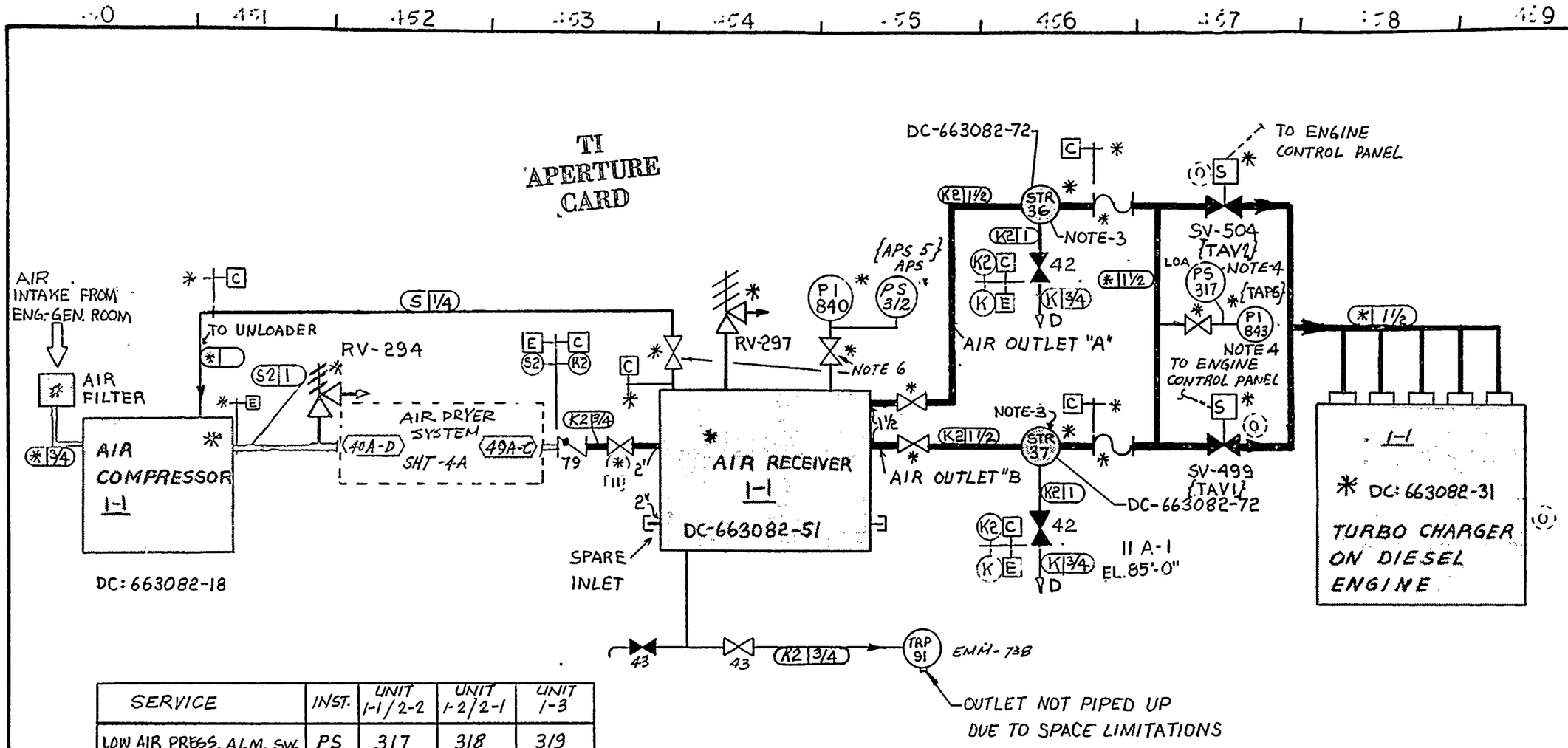
TI APERTURE CARD

SYSTEM NO. 24
REF. DWG.
106721 REV. 2 SH. 7
102021 REV. 7 SH. 5

INDEXED REV. —

P.G.&E.CO.	SHEET NO. 46 OF SHEETS	
	DRAWING NUMBER 107195	CHANGE 1

8405100106-59



SERVICE	INST.	UNIT 1-1/2-2	UNIT 1-2/2-1	UNIT 1-3
LOW AIR PRESS. ALM. SW.	PS	317	318	319
AIR RECEIVER PRESSURE INDICATORS TURBO CHARGER AIR ASSIST INLET PRESS. INDICATOR	PI	840 843	841 844	842 845
AIR COMPRESSOR START PRESS. SWITCH	PS	312	313	314
AIR RECEIVER RELIEF VALVES AIR COMPRESSOR RELIEF VALVES	RV	297 294	298 295	299 296
TURBO CHARGER INLET SOLENOID VALVES {A B	SV	499 504	505 500	506 501
AIR RECEIVER WATER TRAPS	TRP.	91	92	93
AIR RECEIVER OUTLET STRAINER {A B	STR	36 37	44 45	83 84

TURBO CHARGER AIR ASSIST SYSTEM.

TYPICAL FOR FIVE ENG.-GEN UNITS
REF. DWG. DC-663082-31

SYSTEM NO. 24
REF. DWG.
102021 REV 2
102021 REV. 11

NOTES:

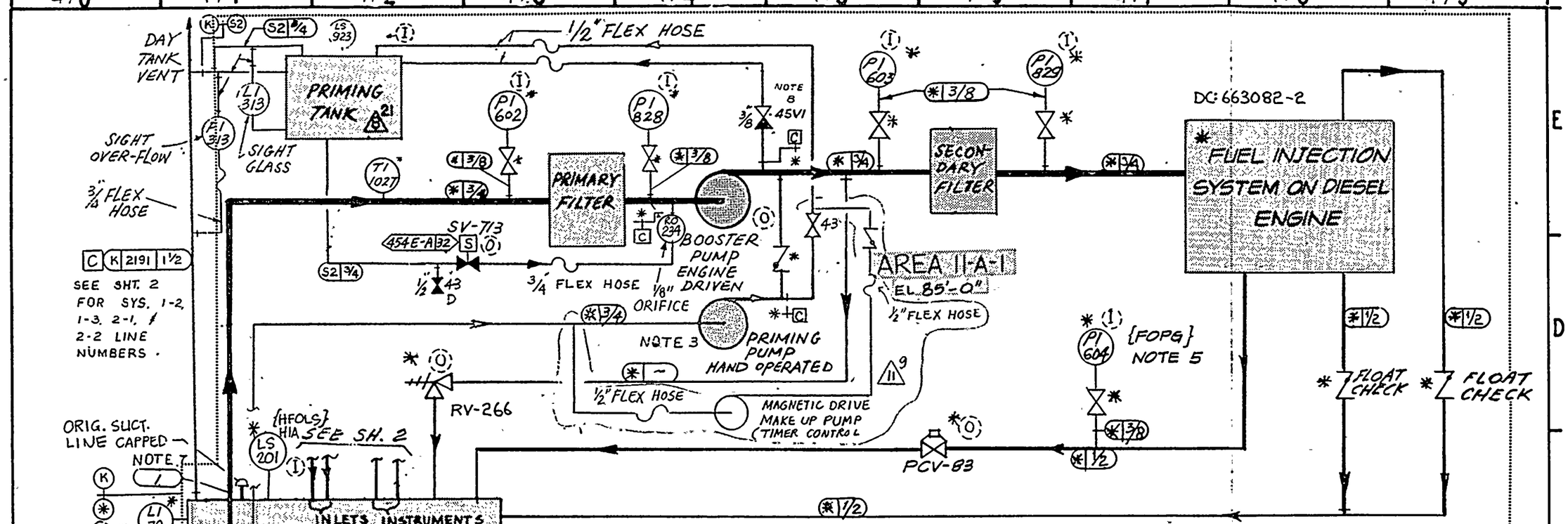
1. * DENOTES MANUFACTURER SUPPLIED INSTRUMENTS AND EQUIPMENT
2. FIELD PIPING THIS SYSTEM SHALL BE PG&E CLASS C, UNLESS NOTED
3. AIR RECEIVER OUTLET STRAINERS BE INSTALLED HORIZONTALLY
4. MOUNTED ON ENGINE CONTROL PANEL. -D
5. ALL VALVE ON THIS SHEET WITH PG&E ITEM NOS. SHALL BE UNDER SPEC. 8729 (DWG. 102039) UNLESS NOTED -C&D
6. FOR UNIT 2 REPLACE THESE VALVE ITEM 11 SPEC 8729

PGM INDEXED REV.

P.G.&E.CO.

SHEET NO. 45 OF SHEETS
DRAWING NUMBER 107195
CHANGE 1

35 M/M Neg.



INST. SERVICE	SYM	TANK 1-1 & 2-2	TANK 1-2 & 2-1	TANK 1-3
PRIMING TANK LEVEL ALARM	LS	923	924	925
RESTRICTING ORIFICE	RO	234	235	236

ENGINE FUEL OIL SYSTEM

TYPICAL FOR FIVE ENG-GEN. UNITS
REF. MFR. DWG. DC-663082-4

ENGINE FUEL OIL SYS. FOR UNIT	ZONE
1-1 (AS SHOWN)	11-A-1
1-2	11-B-1
1-3	11-C-1

INST. SERVICE	SYM.	TANK 1-1 & 2-2	TANK 1-2 & 2-1	TANK 1-3
F.O. BOOSTER PP. DISCH. RELIEF VALVES	RV	266	267	268
F.O. PRESS. CONTROL VALVES	PCV	83	82	80
F.O. TEMP. INDICATOR	TI	1027	1031	1033
F.O. PRESSURE INDICATOR BEFORE PRIM. FILTER	PI	602	624	642
F.O. PRESSURE INDICATOR AFTER PRIM. FILTER	PI	828	830	832
F.O. PRESSURE INDICATOR BEFORE SECOND. FILTER	PI	603	625	636
F.O. PRESSURE INDICATOR AFTER SECOND. FILTER	PI	829	831	833
F.O. PRESSURE INDICATOR	PI	604	626	637
HIGH F.O. LEVEL ALARM SW.	LS	201	205	209
LOW F.O. LEVEL ALARM SW.	LS	200	204	208
F.O. LEVEL INDICATOR DAY TK. / PRIM. TK.	LI	79 / 313	80 / 314	81 / 315
F.O. DAY TK. LEVEL TEST CONNECTION	LX	11	12	13
PRIMING TK F.O. SOLENOID VLV	SV	713	714	715
PRIMING TK F.O. FLOW INDICATOR	FI	313	314	315

NOTES:

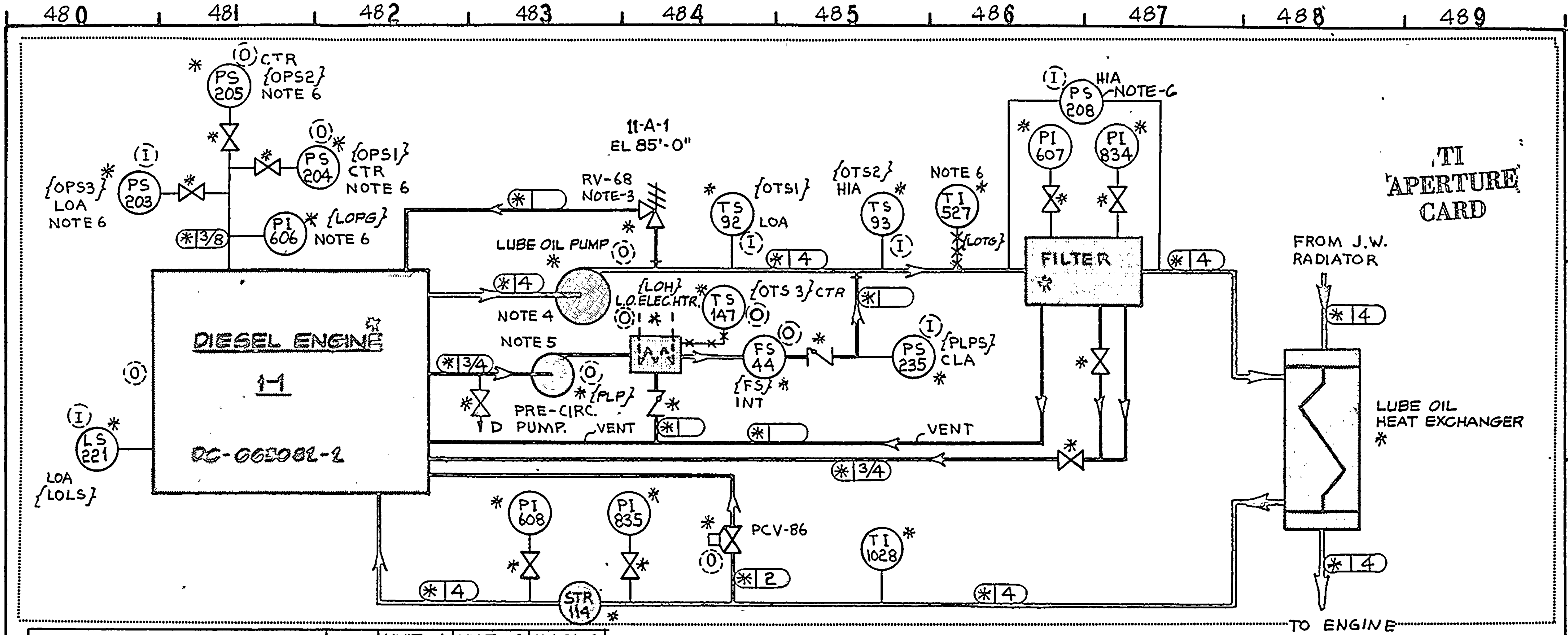
1. DELETED (19)
2. { } MANUFACTURER NO. IDENTIFICATION
3. MANUALLY OPERATED. USED ON INITIAL START ONLY (64-D)
4. SEE MFR. DWG. 663081-4 (-C)
5. MOUNTED ON ENGINE CONTROL PANEL (-D)
6. MANUAL VALVES WITH ITEM NO. SHALL BE UNDER SPEC. 8729. (-C)
7. BY SUPPLIER UNDER SPEC 8735 WISNER & BECKER (-C) VALVE TAG 45VI SPECS ARE IN DWG 053479 (-E)

SYSTEM NO. 24
REF. DWG
106721 REV. 2 SH. 8
102021 REV. 11 SH. 6

P.G.&E.CO.

SHEET NO. 47 OF SHEETS
DRAWING NUMBER 107195
CHANGE 1

8405100106-60



INSTRUMENT SERVICE	SYM.	UNIT 1-1 & 2-2	UNIT 1-2 & 2-1	UNIT 1-3
LUBE OIL PP. RELIEF VALVE	RV	68	69	70
LOW L.O. PRESS. SHUTDOWN SW.	PS	204	213	223
LOW L.O. PRESS. SHUTDOWN SW.		205	214	224
LOW L.O. PRESS. ALARM SW.		203	215	225
PRE. CIRC. L.O. PP. FAILURE ALARM		235	236	237
HI ΔP. ACROSS L.O. FILTER ALARM SW.		208	216	226
L.O. PRESS. IND. BEFORE FILTER	PI	607	627	638
L.O. —"— —"— AFTER FILTER		834	836	838
L.O. —"— —"— BEFORE STRAINER		835	837	839
L.O. —"— —"— AFTER STRAINER		608	628	644
L.O. PRESS. IND.		606	629	639
L.O. HEATER START SWITCH	TS	147	148	149
LOW L.O. TEMP. ALARM SWITCH		92	96	99
HIGH L.O. TEMP. ALARM SWITCH		93	97	100
L.O. COOLER DISCH. STRAINER	STR	114	115	116
L.O. HEATER START INTERLOCK SW.	FS	44	45	46
LOW L.O. LEVEL ALARM SWITCH	LS	221	227	228
LUBE OIL STRAINER BYPASS VALVE	PCV	86	87	88
LUBE OIL TEMP IND.	TI	527	504	505
L.O. HX DISCH TEMP INDICATOR		1028	1032	1034

Also Available On
Aperture Card

LUBE OIL SYSTEM

TYPICAL FOR FIVE ENG-GEN. UNITS
REF. DWG. DC-663082-16

LUBE OIL SYS. FOR UNIT	ZONE
1-1 (AS SHOWN)(2-2)	11-A-1(22-A-1)
1-2 (2-1)	11-B-1(22-B-1)
1-3	11-C-1

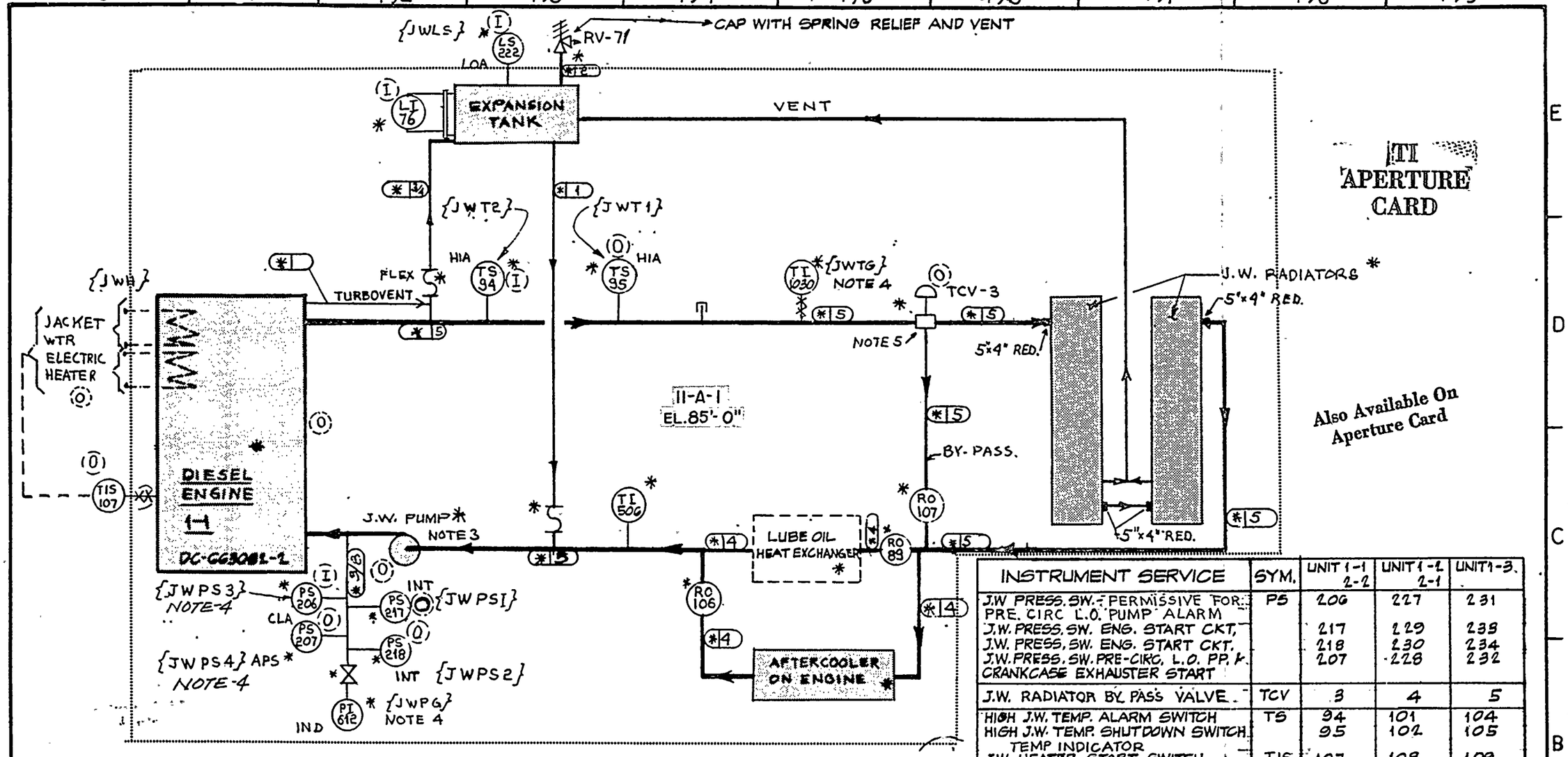
NOTES:

1. THIS SYSTEM PROVIDED COMPLETELY INSTALLED WITH ENGINE-GENERATOR UNITS
2. { } MANUFACTURER NO.
3. RELIEF VALVE BUILT IN TO PUMP
4. ENGINE DRIVEN LUBE OIL PUMP. (-D)
5. PRE-CIRC. L.O. PUMP IS ELECTRIC MOTOR DRIVEN (-D)
6. MOUNTED ON ENGINE CONTROL PANEL (-E)

SYSTEM NO. 24
REF. DWG.
106721 REV. 2 SH. 9
102021 REV. 10 SH. 7

P.G.&E.CO.	SHEET NO. 48 OF SHEETS	
	DRAWING NUMBER 107195	CHANGE 1

8405100106 - 61



INSTRUMENT SERVICE	SYM.	UNIT 1-1 2-2	UNIT 1-2 2-1	UNIT 1-3
J.W. PRESS. SW. - PERMISSIVE FOR PRE. CIRC L.O. PUMP ALARM	PS	206	227	231
J.W. PRESS. SW. ENG. START CKT.		217	229	233
J.W. PRESS. SW. ENG. START CKT.		218	230	234
J.W. PRESS. SW. PRE-CIRC. L.O. PP. & CRANKCASE EXHAUSTER START		207	228	232
J.W. RADIATOR BY PASS VALVE	TCV	3	4	5
HIGH J.W. TEMP. ALARM SWITCH	TS	94	101	104
HIGH J.W. TEMP. SHUTDOWN SWITCH		95	102	105
TEMP INDICATOR J.W. HEATER START SWITCH	TIS	107	108	109
J.W. FLOW BALANCING ORIFICE	RO	89	90	91
		106	108	110
		107	109	111
J.W. EXPANSION TK. PRESS. RELIEF CAP	RV	71	72	75
LOW J.W. EXPANSION TK. LEVEL ALARM SW.	LS	222	229	230
J.W. PRESSURE INDICATOR	PI	612	643	645
J.W. EXPANSION TK. LEVEL IND.	LI	76	77	78
J.W. TEMP. INDICATOR	TI	506	507	508
J.W. TEMP INDICATOR		1030	1035	1036

Also Available On Aperture Card

ENGINE JACKET WATER COOLING SYSTEM

TYPICAL FOR FIVE ENG-GEN UNITS

REF. DWG: DC-663082-17

NOTES:

1. THIS SYSTEM PROVIDED COMPLETELY INSTALLED WITH ENGINE-GEN. UNITS.
2. { } MANUFACTURER NO.
3. ENGINE DRIVEN JACKET WATER PUMP.
4. MOUNTED ON ENGINE CONTROL PANEL.
5. SELF-CONTAINED CONTROL VALVE, FOR OPERATION SEE MANUFACTURER TECHNICAL MANUAL DC-663082-80

ENGINE JACKET WTR. CLG. SYS. FOR	ZONE
1-1 (AS SHOWN) (2-2)	II-A-1 (22-A-1)
1-2 (2-1)	II-B-1 (22-B-1)
1-3	II-C-1

SYSTEM NO. 24
REF. DWG.
106721 REV. 2 SH. 10
102021 REV. 11 SH. 8

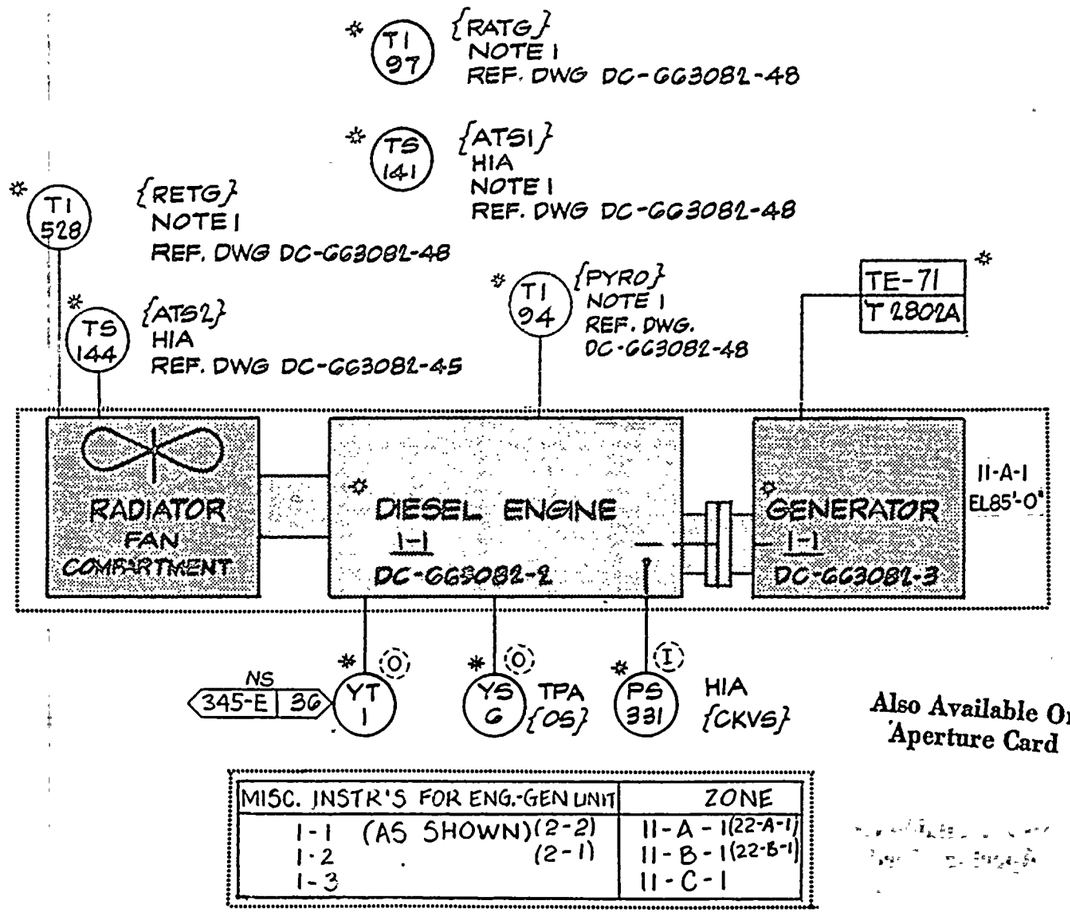
P.G.&E.CO.

SHEET NO. 49 OF SHEETS

DRAWING NUMBER 107195

CHANGE 1

INSTRUMENT SERVICE	SYM.	UNIT 1-1 & 2-2	UNIT 1-2 & 2-1	UNIT 1-3
CRANKCASE VACUUM ALARM SWITCH	PS	331	332	333
DIESEL GEN. STATOR TEMP. ELEMENT	TE	71	72	73
	COMP	T-2802A T-2803A	T-2803A T-2802A	T2804A
ENGINE TACHOMETER TRANSMITTER	YT	1	2	3
ENGINE OVERSPEED TRIP	YS	6	7	8
RADIATOR DISCH. TEMP. INDICATOR	TI	528	529	540
HI ROOM AIR TEMP ALARM SWITCH	TS	141	142	143
HI RADIATOR DISCH. TEMP. ALARM SW.		144	145	146
PYROMETER-CYLINDER TEMP(36PT)	TI	94	95	96
ROOM AIR TEMP. INDICATOR	TI	97	98	99



Also Available On Aperture Card

MISC. INSTR'S FOR ENG.-GEN UNIT	ZONE
1-1 (AS SHOWN) (2-2) (2-1)	11-A-1 (22-A-1)
1-2	11-B-1 (22-B-1)
1-3	11-C-1

35 MM

NOTE:

1. MOUNTED ON ENGINE CONTROL PANEL ⬭

MISC. INSTRUMENTS FOR ENGINE GENERATOR UNITS
TYPICAL FOR FIVE ENG. GEN. UNITS

SYSTEM NO. 24
REF. DWG.
106721 REV 2 SH. 11
102021 REV. 7 SH 9

P.G.&E.CO.

SHEET NO. 50 OF SHEETS
DRAWING NUMBER 107195
CHANGE 1

520 521 522 523 524 525 526 527 528 529

EL. 190'-0" TOP OF PARAPET WALL

ROOF OF MACHINE SHOP BUILDING

MACHINE SHOP

EXHAUST AIR DUCT BUILDING VENTILATION SYSTEM

SUPPLY DUCT FOR BLDG. VENT. OR SAFEGUARDS OPERATING CONDITION

EL. 140'-0"

EXHAUST AIR DUCT SAFEGUARDS VENTILATION SYSTEM

3R

FE 5014

FI 5008

TI APERTURE CARD

3AA

8BI

AUXILIARY BUILDING SUPPLY FAN ROOM

UNIT 1 UNIT 2 UNIT 1 UNIT 2

FAN 100% CFM REQUIRED

K-3105-6 III STEAM SUPPLY <54-D-06>

MECH.

H-3106-2 III P CONDENSATE RETURN HDR <55-D-06>

OPEN ONLY WHEN SAFEGUARDS & BLDG. VENT. SYSTEMS ARE OPERATING SIMULTANEOUSLY WITH 2 SUPPLY (A OR B) & 2 EXHAUST (E-1, E-2) FANS.

EL. 115'-0"

3BI HEAT EXCHANGERS MECH. AREA NOTE 2

3B2 MAKE UP DEMINERALIZERS AREA

HATCH W/GRATING COVER TYP FOR 3 FLOORS

CORRIDOR EL. EL. 115'-0"

HAKE UP MIXING BED AREA

ANTHRACITE

ACID & CAUSTIC DAY TANKS AREA

DEMINERALIZERS MECH. AREA

ION EXCHANGERS AREA

BORIC ACID TANKS MT-1, 1-E

SPENT RESIN STORAGE TANKS

ANCH. SPEC 6827 MECH. SPEC 8711

1K1301C14 54-D-08

L.I.Q. HOLD UP TKS. VAC PROT.

Also Available On Aperture Card

SPEC 8827 ARCH. MECH SPEC 8002

3X

NUCLEAR STEAM SUPPLY SYSTEM SAMPLE ROOM RADIATION MONITOR <104-A-931>

RHR EXHAUST RADIATION MONITOR

CONTROL VALVES

VOLUME CONTROL TANK

SAMPLE HEAT EXCHANGERS

EL. 100'-0"

EXHAUST AIR DUCT BUILDING VENTILATION SYS. 519-B

3P3

3L

AUXILIARY BLDG. CONTROL BOARD NS 4104-B-931N

CORRIDOR

CONTINUOUSLY OPERATING DUCT UNDER ALL 3 MODES OF OPERATION, (AIR ROUTED VIA "SAFEGUARDS" DUCTS DURING COMBINATION BUILDING SAFEGUARDS MODE")

3BI

3B2

SAMPLE PANELS

SAFETY INJECTION PUMPS

LET CONN/SEAL WATER HEAT EXCHANGERS MT-1-1, 1-2

AUX. BLDG. CONTROL BOARD

3M

EL. 85'-0"

FI 5001

3C

3J1 3J2 3J3

3B

3BB BORON INJECTION TANK MT-1

3F

FI 5002

3H2

3H1

CHARGING PUMP 1-3 MT-1-3

CONTAINMENT SPRAY PUMPS SPRAY ADDITIVE TANK

ELECTRICAL M.C.C.

CONTINUOUSLY OPEN UNDER ALL MODES OF OPERATION

3C

OPEN 100% PARTIALLY CLOSE TO PASS 800 CPM EACH

FI. EL. 85'-0"

3L

SAMPLE SINK MT-1-1

LAB WASTE CONCENTRATOR MT-0-1

DISTILLATE PUMP MT-0-1

BORIC ACID EVAPORATOR MT-1-1

VALVE GALLERY

BORIC ACID EVAPORATOR MT-2-1

SPEC 8827 ARCH SPEC 8711 MECH

AUX BLDG. SUMP O-1 VENT <55-E-19>

2K3016C4

55-D-08 L.I.Q. HOLD UP TKS. VAC PROT.

CONCENTRATE HOLDING TANKS TRANS. PUMPS

WASTE CONCENTRATE HOLDING TANKS TRANS. PUMPS

DRUMMING STATION RADIATION MONITOR <4105AE-931>

DRUMMING STATION

EL. 73'-0"

COMPONENT COOLING WATER PUMP MP-1-1

COMPONENT COOLING WATER PUMP MP-1-2

COMPONENT COOLING WATER PUMP MP-1-3

3BI

3H1

3B2

EL. 64'-0"

SPARE AREA

LAUNDRY HOT SHOWER TANKS & PUMPS

RESIDUAL HEAT REMOVAL PUMP MP-1-1

VALVE GALLERY

RESIDUAL HEAT REMOVAL PUMP MP-1-2

MONITOR TANKS 1-1 & 1-2 PUMPS NO. 1-1

LIQUID HOLD UP SEURC PUMP MP-1-1 (ALSO GAS STRIPPER FEED PUMPS)

LIQUID HOLD UP TANKS (8)

EL. 60'-0"

EL. 58'-0"

EL. 54'-0"

PIPE TUNNEL

PIPE TUNNEL

WASTE CONC. COND. TANK VENT <46-C-19>

FLOOR DRAIN RCVR VENT <46-D-15>

EQUIP. DRAIN RCVR VENT <46-C-19>

DRUM HOIST AREA

WASTE CONCENTRATE FLOOR DRAIN AUX. STEAM DRAIN TANK PUMPS BORIC ACID EVAP DRIP POTS

GAS DECAY TANKS

WASTE GAS COMPRESSOR MT-1-1

WASTE GAS COMPRESSOR MT-0-1

MISC. EQUIPT DRAIN TANK O-1 VENT. <46-E-19>

ANCH. SPEC 6827 MECH. SPEC 8002

A1K2601B6

NOTES.

1 TUBING, VALVES & TRAPS TO BE UNDER SPEC 8806 (42-C) & ELEMENT PROBES BY OTHERS AND INSTALLED UNDER SPEC 8827.

3 THIS SHEET IS ADOPTED FROM PG&E DWG NO. 57316 AND 503645 VENTILATION & INSTRUMENTATION IS CALLED OUT ON THAT DWG. AND DOES NOT APPEAR ON THIS SHEET.

FUTURE DEMIN.

DEMINERALIZER

FILTERS & RAD WASTE

FUTURE DEMIN. PANELS

LIGHTING PANEL 1

TRANSFORMER MT-1

EL. 100'-0"

CORRIDOR

AIR RECEIVER

EL. 85'-0"

CORRIDOR

LIQUID HOLD UP TANKS (8)

LEGEND

- SUPPLY AIR - BUILDING VENT SYS.
- SUPPLY AIR SAFEGUARDS VENT SYS.
- EXHAUST OR RETURN AIR - BLDG VENT SYSTEM
- EXHAUST AIR SAFEGUARDS VENT. SYS.
- SUPPLY AIR OUTLET
- EXHAUST OR RETURN AIR INLET
- FREE OPENING BETWEEN RM.'S / CORRIDOR
- OPPOSED OR PARALLEL BLADE DAMPER
- BUTTERFLY VALVE
- MODE DAMPER (PNEUMATIC OR MAN.)
- MOTORIZED DAMPER
- BACK DRAFT DAMPER - NOT MOTORIZED
- OUTSIDE AIR INTAKE LOUVER
- ROUGHING FILTER
- HEPA FILTER
- CHARCOAL FILTER
- HEATING COIL, "E" INDICATES ELECTRIC HEATING
- COOLING COIL
- DEMISTER
- FAN
- FAN WITH INLET VANES
- EQUIPMENT HANGER
- FLOW CONTROL VALVE
- FLOW CONTROL VALVE
- DUCT AIR VOLUME MONITOR
- SAFEGUARD SYSTEM EQUIP ROOMS APPLICABLE TO AUX BLDG. ONLY.
- EXHAUST AIR FLOW
- SUPPLY AIR FLOW

AUXILIARY BUILDING (ENGINEERED SAFETY EQUIPMENT AREA)

SYSTEM NO. 25

REF. DWG. 106723 REV. 1 SH. 4
102023 REV. 6 SH. 4.

P.G. & E CO. DRAWING NO. 107195 CHANGE

SHEET 52 OF SHEETS

25 M

8405100106-65

DOME AREA

EL. 199-0"

EL. 140-0"

EL. 63-5"

SEE EH-55 FOR CNT GAS & AIR MONITORS AND POST-LOCA SAMPLING SYS

CONTAINMENT HIGH RANGE RADIATION MONITOR

CONTAINMENT HIGH RANGE RADIATION MONITOR

CONTAINMENT AREA RADIATION MONITOR

PRESSURIZER ROOM

CONTROL ROD DRIVE MECHANISM COOLING FANS, 4 RUNS ONE FAN STAND BY. NOT VITAL.

BACK DRAFT DAMPERS NOT MOTORIZED.

FAN COOLER UNIT TYP OF FIVE, ONE FAN STAND BY. VITAL, FOR DET SEE SHT 6 (TYP)

THRU EXHAUST FAN

SPACE FOR CHARCOAL FILTERS

SPACE FOR CHARCOAL FILTERS

INCORE TABLE AREA RAD. MONITOR (NOTE 3)

INCORE INSTRUMENT ROOM

POOL AREA

MAIN SUPPLY ANNULAR RING

MAIN SUPPLY ANNULAR RINGS

FAN COIL UNIT NOT VITAL

COOLING COIL

REACTOR

REGENERATIVE & LET DOWN HEAT EXCHANGERS

STEAM GENERATOR NR 3 & 4 COOLANT PUMPS NR 2 & 4

STEAM GENERATOR NR 1 & 2 COOLANT PUMPS NR 1 & 2

EXHAUST FAN IODINE REMOVAL UNIT ONE UNIT STAND BY. NOT VITAL.

ANNULAR RING BELOW REACTOR DISCHARGING

INCORE CHILLER (SEE DWG 59339)

3BB EL 100-0"

EL 91-0"

PLANT VENT NOTE 6 (TYP OF 3)

GRAB SAMPLE (TYP OF 4)

RE-29
RE-32
RE-33
FE-34
RE-35
RX-36

STEAM AIR EJECTOR EXHAUST VENT

ISLAND STEAM CONDENSER EJECTOR VENT

ON VITAL BUS FOR CFM EACH FAN: REDUNDANT SYSTEM ONLY

3P2

3P4 115'-0"

3P3 115'-0"

3P5 EL 115'

3P2 EL 100

PURGE AIR IN

CONTAINMENT PURGE AIR SUPPLY FAN ROOM

CONTAINMENT PURGE AIR EXHAUST FAN CC-063

VACUUM RELIEF PURGE AIR OUT

CONTAINMENT PURGE AIR EXHAUST FAN CC-064

FOR INTEGRATED LEAK RATE TEST

EXCESS PRESS RELIEF

EL. 117'-0"

3P6 EXHAUST DUCT

WASTE EVAP VENT CNR, 0-1 (UNIT 1 ONLY)

GAS DECAY TANKS

GASEOUS RADWASTE FILTER 14-352 (REMOVABLE)

100 CFM NOT VITAL BUS SEPARATE SYSTEM ONLY

GAS DECAY VENT HDR AIR PLENUM

3P6 EL 140'

3P7 EL 140'

3P8 EL 140'

FUEL HANDLING AREA EXHAUST FAN ROOMS

ROOF OF FUEL HANDLING BUILDING

EL 190-0"

Also Available On
Aperture Card

3S

3R

SPENT FUEL POOL AREA

EL 165-0"

EXHAUST AIR DUCT BURG VENTILATION SYSTEM

EXHAUST AIR DUCT SAFE GUARDS VENTILATION SYSTEM

SPENT FUEL POOL AREA RADIATION MONITOR

7600 CFM

EL 140-0"

NEW FUEL STORAGE AREA RADIATION MONITOR

3R EL 115'

NEW FUEL STORAGE EL 140'

EL 125'-0"

CASK DECONTAMINATION AREA

FI 5011

FI 5019

FIRE RAMPS

EL 115'-0"

CORRIDOR

SPENT FUEL POOL

3Q EL 100'

SPENT FUEL POOL PUMPS & FILTERS

AUXILIARY FEED PUMP

AUX FEED & MAKE UP WATER TRANSFER PUMP VAULT

3-Q-2

3-Q-1 EL 100

EL 100-0"

3P2 EL 100'-0"

PRIMARY WATER MAKE UP PUMPS

FI 5016

SPENT FUEL POOL HEAT EXCHANGER

EXHAUST AIR DUCT, BUILDING VENTILATION SYSTEM ON CONCRETE AIR DUCT UNDER FUEL HANDLING AREA

3P3 EL 85'-0"

EL 85'-0"

FUEL HANDLING BLDG SUPPLY FAN ROOM

FI 5018B

FI 5018A

3P1 EL 85'

VENT STACK PENETRATION AREA

AUX. BLDG. EXHAUST FAN RMS

FI 5017B

FI 5017A

EACH FULL CAPACITY FAN OF A REDUNDANT SET RECEIVES POWER FROM A SEPARATE VITAL BUS BOTH WILL OPERATE WHEN SELECTED

FROM EXCESS PRESSURE VALVE

VALVES AND DAMPERS OPERATE SIMULTANEOUSLY FOR PRESSURE RELIEF SYSTEM

PRIMING WATER

SHT 5 I/P AUX BLDG SUMP, 0-1.

FI 5051

NOTES:

1. VALVES WITH ITEM NOS UNDER THIS NOTE ARE UNDER SPEC 8729, REFER TO PG&E DWG. NO. 102039 (31-C)
2. VALVES WITH THESE ITEM NOS. ARE UNDER SPEC 0722 REFER TO PG&E DWG 102039.
3. LOCATE NEAR TOP OF SEAL TABLE ABOVE ELEV 115'-0" (31-D)
4. THIS SHEET IS ADOPTED FROM PG&E DWG NOS. 59317, 59336. VENTILATION INSTRUMENTATION IS CALLED OUT ON THAT DRAWING AND DOES NOT APPEAR ON THIS SHEET
5. SPECTACLE FLANGE SHALL BE CLOSED DURING PLANT OPERATION. MOV 13 IS NON-CLASS 1 (34-B)

CONTAINMENT VENTILATION SYSTEM

AUX. & FUEL HANDLING BLDGS SUPPLY & EXHAUST AIR SYSTEMS

SYSTEM NO. 25
REF. DWG.
106723 REV. 9 SH. 3
102023 REV. 6 SH. 3

P. G. & E. CO.	DRAWING NO.	CHANGE
SHEET 51 OF SHEETS	107195	

530 531 532 533 534 535 536 537 538 539

CONTAINMENT HYDROGEN PURGE SYSTEM

OUTSIDE CONTAINMENT — INSIDE CONTAINMENT

2 3/4" I.D. RUBBER HOSE
3 1/2" ID RUBBER HOSE 4R95247 TYP
O/A
K 4380 4
K 3
FILTERS (1-1) [2-2]
DC 683698-10
SUPPLY FAN (1-1) [2-2]
DC 683698-54
K 4381 4
K 2 1/2
HCV-145
CHP SUPPLY SYSTEM 1-1
475E-B 32
FE 18
NOTE 4
NOTE 2
SC
K2 4382 4
PLANT VENT
3BB EL 100'-0"
HYDROGEN RECOMBINER 1-1
HYDROGEN RECOMBINER 1-2
TT 121
TT 122
TT 123
TT 221
TT 222
TT 223
242A-C 35

2 3/4" ID RUBBER HOSE
3 1/2" ID RUBBER HOSE 4R 95247 (TYP)
O/A
K 4384 4
K 3
FILTERS (1-2) [2-1]
DC 683698-10
SUPPLY FAN (1-2) [2-1]
DC 683698-54
K 4385 4
K 2 1/2
HCV-146
CHP SUPPLY SYSTEM 1-2
475E-B 32
FE 19
NOTE 4
NOTE 2
S.C.
K2 4386 4
K2 4387 4
T.C.
NOTE 3
514-C
83
1A EL 100'-0"
K2 2
K2 4388 4
K2 4389 4
37
NOTE 6
FOR LEAK TESTING
PROVISION TO INSTALL EXTERNAL HYDROGEN RECOMBINERS
FCV 668 472FE32
NS
81
FCV-658 472FE32
NOTE 7 (TYP OF 2)

K-4391-4
P1 630
B-0102
FILTERS 1-2
DC 683698-8
CHP EXHAUST SYSTEM 1-2
2 3/4" ID RUBBER HOSE
3 1/2" ID RUBBER HOSE 4R 95247 (TYP)
K 4394 4
K 2 1/2
HCV-147
K 4392 4
K 3
EXH. FAN 1-2
DC 683698-54
475E-B 32
K2-4390-4
Fe 17
NOTE 4
K2-4395-4
FCV-669 471FA32
NS
3BB EL 100'-0"
57
FCV-659 472FE32
DELETED
1A EL 100'-0"
63
FCV-662 134-C
475E-E 32
FE 16
NOTE 4
HCV-148
K 4396 4
CNT. EXCESS PRESS. RELIEF LINE
514-C
FCV-603
TC
NOTE 12
AUX. & FUEL HANDG BLDG: EXH. FAN & FILTERS
CHP EXHAUST SYSTEM 1-1

NOTES:
1. DASH LINES REPEATED FOR CLARITY ONLY.
2. ANCHOR/DARLING 4" GATE VALVE. DC 678620-1-2
3. VALVES WITH ITEM NUMBERS UNDER THIS NOTE ARE UNDER SPEC 1166. REFER TO PG&E DWG. 102039.
4. REFER TO PG&E DWG. 053092 FIG. 224 FOR INSTALLATION.
5. 6 VALVES WITH ITEM NUMBER UNDER THIS NOTE ARE UNDER SPEC B729. COOR. 148A-C/D
7. FLANGE WITH PROVISION FOR LEAK RATE TEST OF ISOLATION VALVE SHALL BE REMOVABLE AND READILY AVAILABLE FOR USE FOR PERIODIC TESTS.

SYSTEM NO. 25
REF. DWG.

P.G.&E.CO.
SHEET NO. 52 OF SHEETS
DRAWING NUMBER 107195
CHANGE 1

TI APERTURE CARD

Also Available On Aperture Card

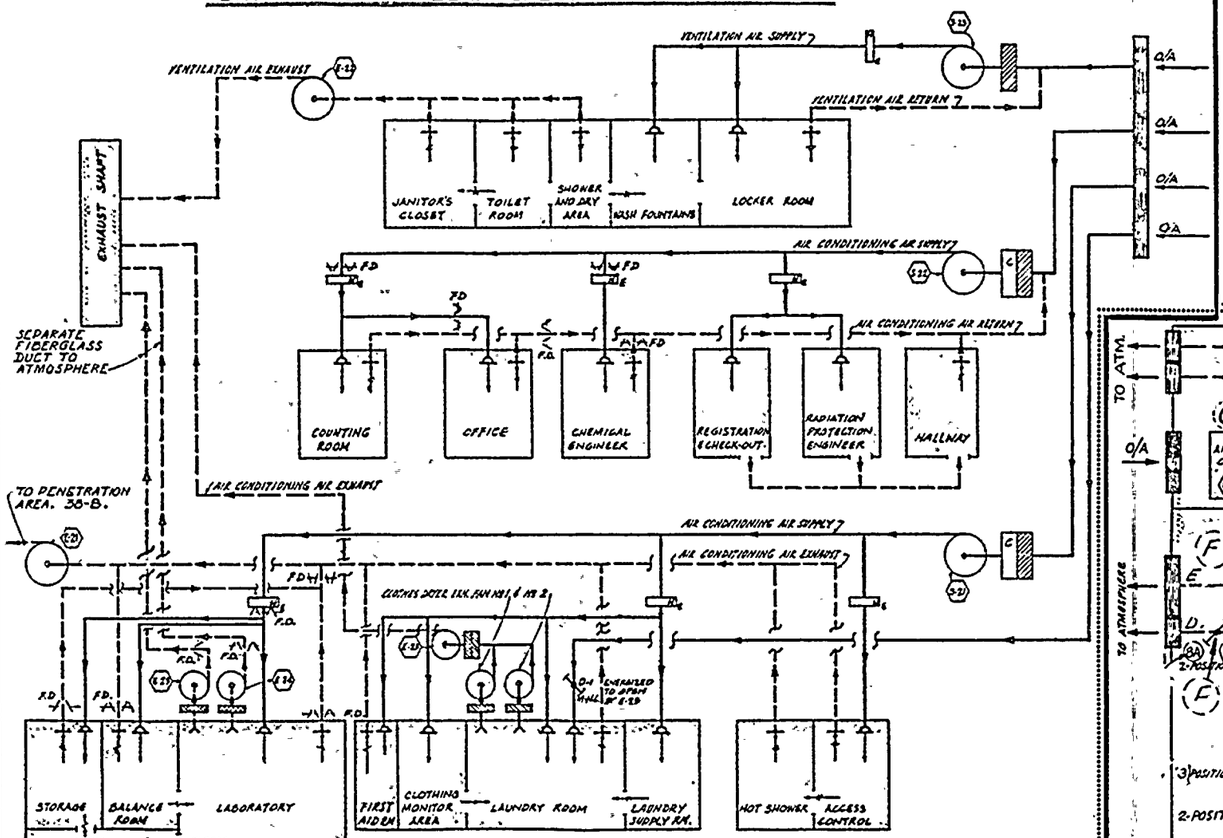
RM INDEXED REV.

35 MM MICRO

① DCO-GM-2409

8405100106-66

UNIT No. 1 UNDER SPECIFICATION 8828



ACCESS CONTROL AREA

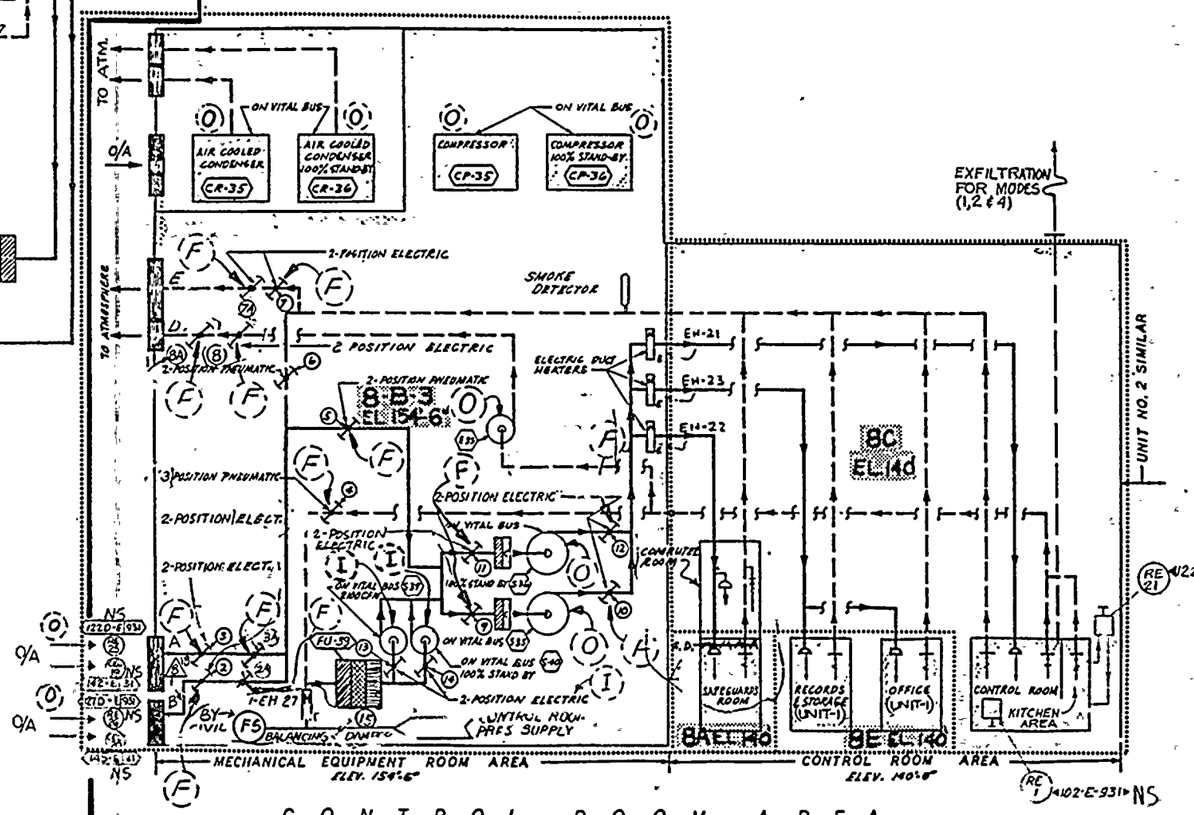
MODE OF OPERATION IN ACCESS CONTROL AREA

VENTILATION SUPPLY AIR FAN S-29 AND TOILET EXHAUST FAN E-22 SHALL BE OPERATED BY MANUAL STARTER AND RUN CONTINUOUSLY.

AIR CONDITIONING UNIT SUPPLY AIR FAN S-22 SERVING THE NON CONTAMINATED AREA SHALL BE OPERATED BY MANUAL STARTER AND RUNS CONTINUOUSLY.

AIR CONDITIONING UNIT SUPPLY AIR FAN S-21, EXHAUST AIR FAN E-21 SERVING THE CONTAMINATED AREA, AND LABORATORY HOOD EXHAUST FANS E-23 & E-24 SHALL BE OPERATED BY S-21 MANUAL MAGNETIC STARTER AND RUNS CONTINUOUSLY. CLOTHES DRYER EXHAUST FANS NO. 1 & NO. 2 SHALL BE OPERATED BY LOCAL SWITCHES. EXHAUST FAN E-25 SHALL BE ENERGIZED TO OPERATE WHEN EITHER ONE OF THE CLOTHES DRYER EXHAUST FANS IS RUNNING. MOTORIZED DAMPER D-1 SHALL BE ENERGIZED TO OPEN WHEN E-25 IS RUNNING.

F.D. — FIRE DAMPERS.



CONTROL ROOM AREA

MODES OF OPERATION IN CONTROL ROOM

1	73% RECIRCULATED AIR OPERATION WITH 27% OUTSIDE AIR MAKE-UP 100% AIR THRU ROUGHING FILTERS. FOR USE DURING NORMAL OPERATIONS.
2	ONCE THRU 100% OUTSIDE AIR MAKE-UP OPERATION: FOR USE IN EVENT OF A FIRE IN CONTROL ROOM AREA.
3	100% RECIRCULATED AIR OPERATION WITH 27% AIR THRU HEPA AND CHARCOAL FILTERS: FOR USE IN THE EVENT OF CHLORINE RELEASE
4	11400 CFM RECIRCULATED AIR OPERATION WITH THE COMBINATION OF 1600 CFM PRESSURIZATION AIR AND 2600 CFM OF RECIRCULATION AIR FOR A TOTAL OF 4200 CFM THROUGH HEPA AND CARBON FILTERS. FOR USE IN THE EVENT OF AIRBORNE RADIOACTIVITY. NORTH AN SOUTH PRESSURIZATION TRAINS DO NOT OPERATE SIMULTANEOUSLY.

REFERENCE

1. FOR LEGEND AND SYMBOL LIST SEE SHT. 4.
2. FOR FAN SCHEDULE SEE DWG No. 59344 & 59355

NOTE

1. THIS SHEET IS ADOPTED FROM PG&E DWG 59318 & 59362 VENTILATION INSTRUMENTATION IS CALLED OUT ON THAT DWG & DOES NOT APPEAR ON THIS SHEET.
2. FOR UNIT 2 SUBSTITUTE INST.

REF. DWG.

SYSTEM NO. 25

P. G. & E. CO.	DRAWING NO.	CHANGE
SHEET 54 OF SHEETS	107195	1

35 M/M

CONTAINMENT WALL
INSIDE
OUTSIDE
PENETRATION AREA
AUXILIARY BLDG
CUT & CAP WHEN PERMANENT POST-LOCA SAMPLING SYSTEM BECOMES OPERATIONAL (TYP OF 2)
CNT AIR
FCV 678 (F)
472A-B 32 NS
52 B
1A EL 100'-0"
68
T.C
ITEM-5 NOTE-2
52-3837-1
3BB EL 100'-0"
474A-B 32 NS
FCV 679 (F)
FCV-690
472H-A 32
5-520-1
5-3970-1/2
HCV-201
46-E 11
POST-LOCA INTERIM SAMPLING SYSTEM (UNIT-1 ONLY)
CONTAINMENT GAS & AIR PARTICULATE MONITORS
RE 11
RE 12
5H-11 931
477H-A 32
FCV 691
5-3981-1/2
45C4
45V3
ITEM-19 NOTE-1
2"
ELBOW TURNED DOWN (KEEP CLEAR)
CNT AIR RETURN
69
52-3838-1
478A-B 32 NS
476J-A 32
FCV 681
1 S-521-1
FCV-1428
52-4999-1
POST-LOCA SAMPLING SYSTEM
RETURN LINE NOT HEAT TRACED IN GE-GW AREA
11 49-C
471J-A 32 NS
FCV 698 (F)
82
NOTE-3
S-4670-1/4
FCV 699
45V3 TV
56-B 11
POST-LOCA SAMPLING SYSTEM
45V3 TC
45C4
ELBOW TURNED DOWN (KEEP CLEAR)
CNT AIR RETURN
471J-A 32 NS
FCV 700
TV 45V3
S-4672-1/4
11 59-A

NOTES:
1. UNDER SPEC 8729 SEE PG&E DWG 102039.
2. UNDER SPEC 0722 SEE PG&E DWG 102039.
3. CNT AIR SUPPLY AND RETURN TUBING SHALL PASS THRU ONE 1" SLEEVE OF PENETRATION NO. 82
4. THIS CHECK VALVE IS IN BOTH UNIT 1&2 BUT IT HAS ITS INTERNALS REMOVED. SV'S AT THE FCV-690&691 LOCATION ALSO EXIST FOR UNIT 2 BUT ARE INCLUDED AS PART OF THE RE-11/12 PACKAGE.

SYSTEM NO. 25
REF. DWG.
102023 REV. 8 SH. 11

PG&E CO.	107195	REV. 1
SHEET 55 OF SHEETS	MICROFILM	

RM INDEXED REV.

61-4451 3-79

560 561 562 563 564 565 566 567 568 569

A B C D E

CONTAINMENT WALL

INSIDE ← → OUTSIDE

FCV 235 SV (F) — 474G-A | 32 — NS — TYP FOR 2

CNT. AIR — NOTE 2 (F)

S 4633 3/8 — 52 — NOTE-1 (TYPICAL)

FCV 236 (F) SV — T.V. 45V3 — 45V3 — CEL-82 | 152-B | 31

IA EL 100'-0"

3BB EL 100'-0"

TYP FOR 4 — 474G-E | 32

FCV 237 (F) SV — 45V3 — 45V3 — T.V.

45C4 — S 4634 3/8 — 52

ELBOW TURNED DOWN (KEEP CLEAR) NOTE 2 — CNT. AIR RETURN — 45V3 — T.C.

FCV 238 SV (F) — CNT. AIR — NOTE 2 — S 4635 3/8 — 78

FCV 239 (F) SV — T.V. 45V3 — 45V3 — CEL-83 | 157-B | 31

FCV 240 (F) SV — 45V3 — 45V3 — T.V.

45C4 — S 4636 3/8 — 78

ELBOW TURNED DOWN (KEEP CLEAR) NOTE 2 — CNT. AIR RETURN — 45V3 — T.C.

B — NOTE 3

HYDROGEN MONITORS

NOTE:

1. SUPPLY & RETURN TUBING SHALL PASS THRU 1" SLEEVE OF PENETRATION NO. 52 & PENETRATION NO. 78
2. END CONNECTION PROVISION FOR LEAK RATE TESTING.
3. INSTRUMENT CLASS 1B

SYSTEM NO. 25
REF. DWG.
102023 REV. 8 SH 13

PG&E CO.	107195	REV. 1
SHEET 56 OF SHEETS	MICROFILM	

RM INDEXED REV.

61-4451 3-79

570 571 572 573 574 575 576 577 578 579

A B C D E

TURBINE BUILDING

O/A

SUPPLY FAN, 11,735 CFM
ON VITAL BUS, 100% CFM EACH FAN
REDUNDANT AND/OR SEPARATE
SYSTEMS.

(F) S-43

(O)

S-44

(O)

(F)

INVERTER ROOMS

6A-1 EL. 115'

6A-2 EL. 115'

6A-3 EL. 115'

EL. 115

480V SWITCHGEAR ROOMS

ABOVE FIRE ZONE G-A-5
EL. 115'-0"

TO TURBINE BLDG. ATMOS.

6A-1 EL. 100'

5A-2 EL. 100'

5A-3 EL. 100'

EL. 100

LEGEND

- SUPPLY AIR DUCT
- EXHAUST AIR DUCT
- OUTSIDE AIR INTAKE LOUVER
- SUPPLY FAN
- SUPPLY AIR OUTLET
- EXHAUST AIR INLET
- ROUGHING FILTER
- OPPOSED OR PARALLEL BLADE DAMPER
- FIRE DAMPER

TI APERTURE CARD

SYSTEM NO. 25
REF. DWG.
102023 REV. 8 SH. 14

AUXILIARY BUILDING

INVERTER ROOMS & 480V SWITCHGEAR ROOM

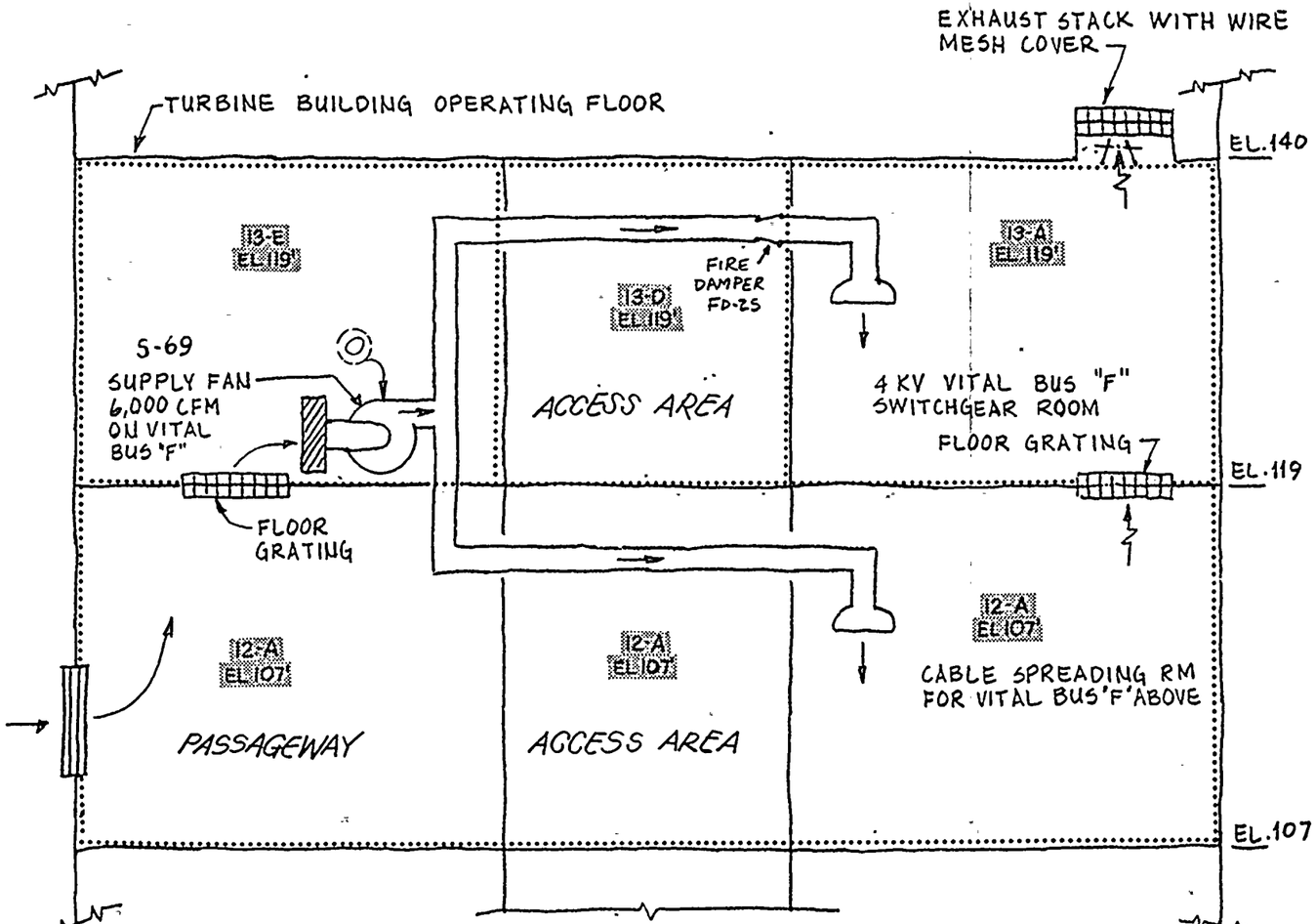
Also Available On Aperture Card

PG&E CO.	107195	REV.
SHEET 57 OF SHEETS	MICROFILM	1

61-4451 3-79

RM INDEXED REV. ____

8405100106 -70



LEGEND

- SUPPLY AIR DUCT
- OUTSIDE AIR INTAKE LOUVER
- SUPPLY FAN
- SUPPLY AIR OUTLET
- EXHAUST AIR INLET
- ROUGHING FILTER
- FIRE DAMPER

Also Available On Aperture Card

TURBINE BUILDING - 4KV VITAL BUS "F"

SWITCHGEAR AND CABLE SPREADING ROOM

(4KV BUSES "G" AND "H" ARE SIMILAR)

VITAL BUS		F	G	H	ZONE ELEV.
SUPPLY FAN	NO.	69	68	67	
	FIRE ZONES	13-E	13-E	13-E	119'
DIESEL-GEN SWITCHGEAR		13-A	13-B	13-C	
SWITCHGEAR ACCESS AREA		13-D	13-D	13-D	
CABLE SPREADING ROOM, ACCESS AREA, PASSAGEWAY		12-A	12-B	12-C	107'

SYSTEM NO. 25
REF. DWG. 102023 REV. 8 SH. 15

RM INDEXED REV. ____

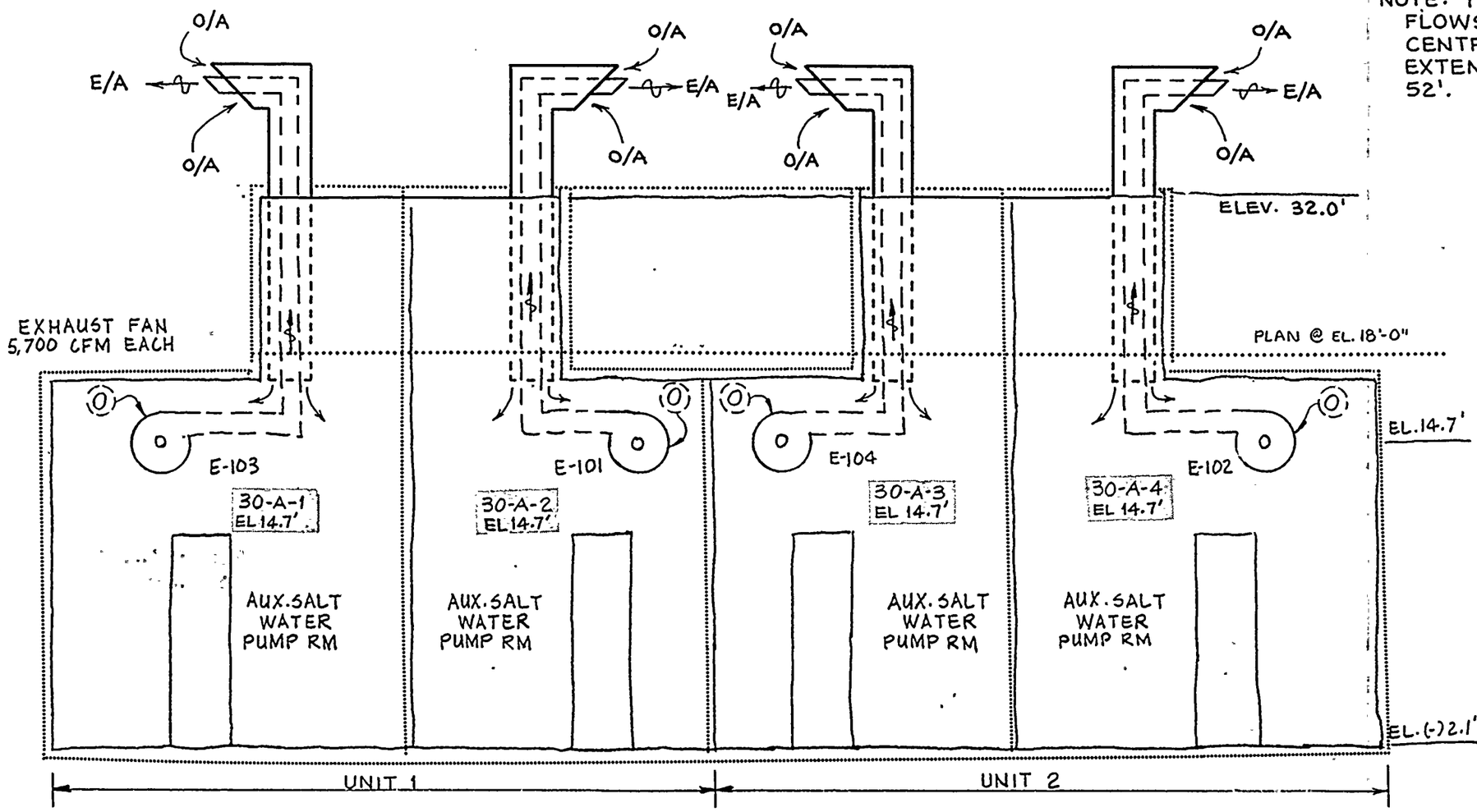
61-4451 3-79

P G & E CO.	107195	REV.
SHEET 58 OF SHEETS	MICROFILM	1

590 591 592 593 594 595 596 597 598 599

A B C D E

NOTE: THE INTAKE & EXHAUST FLOWS PASS THRU CONCENTRIC PIPES WHICH EXTEND UP TO ELEVATION 52'.



LEGEND

- COAXIAL SUPPLY & EXHAUST SAFEGUARD DUCT.
- EXHAUST AIR, E/A
- OUTSIDE AIR, O/A
- FAN, EXHAUST

INTAKE STRUCTURE
AUXILIARY SALTWATER PUMP ROOM

SYSTEM NO. 25
REF. DWG.
102023 REV. 8 SH. 16

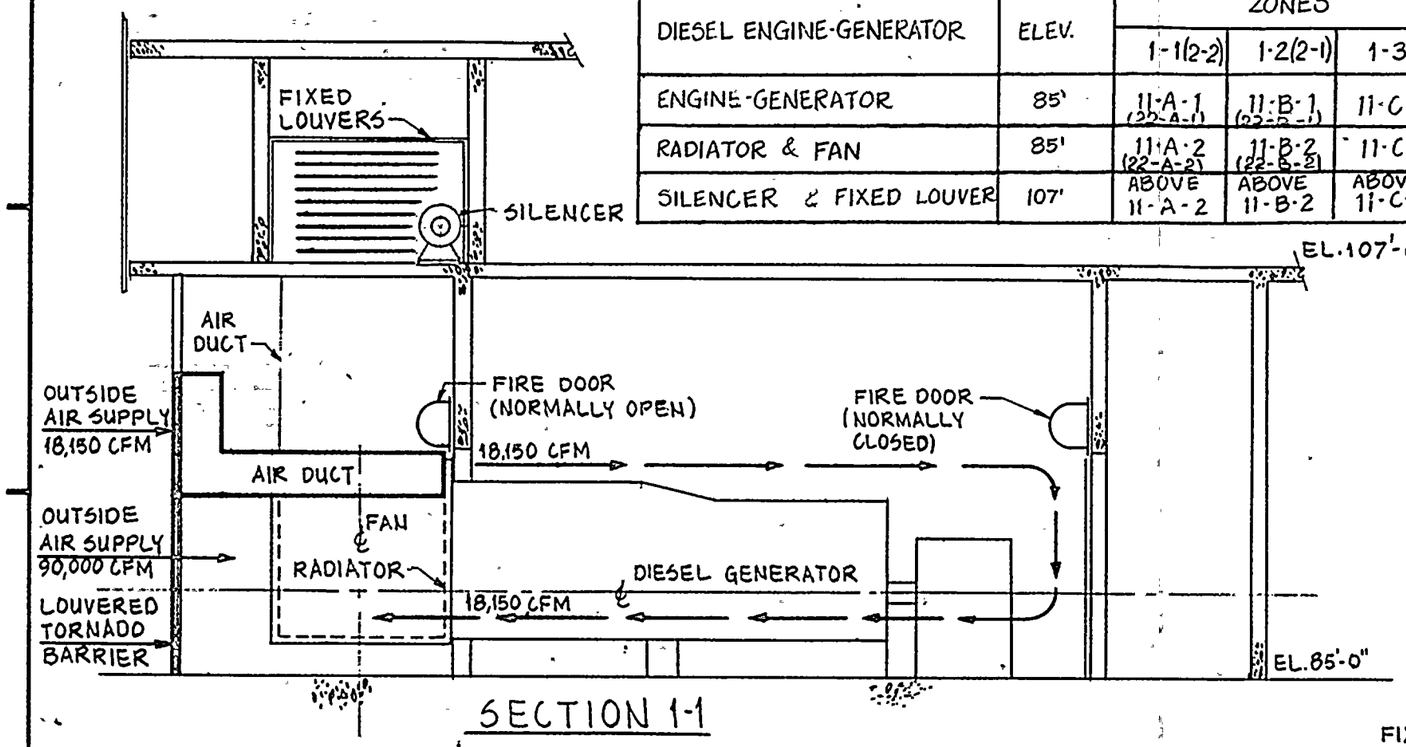
PG&E CO.	107195	REV.
SHEET 53 OF SHEETS	MICROFILM	1

INDEXED REV.

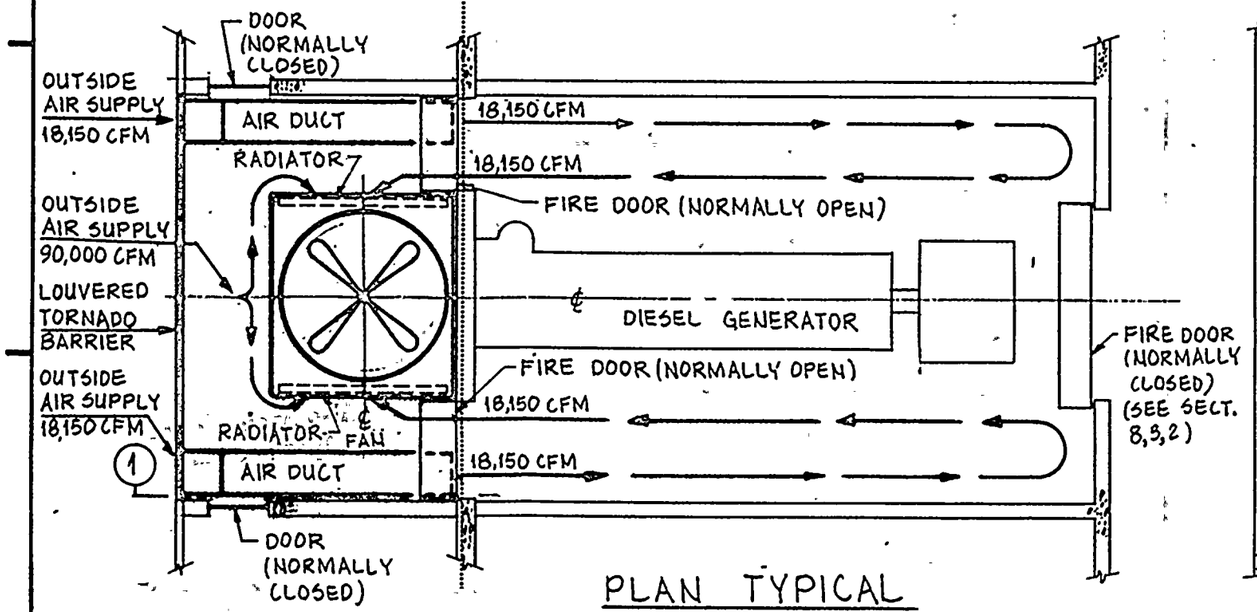
61-4451 3-79
59614

8405100106 -72

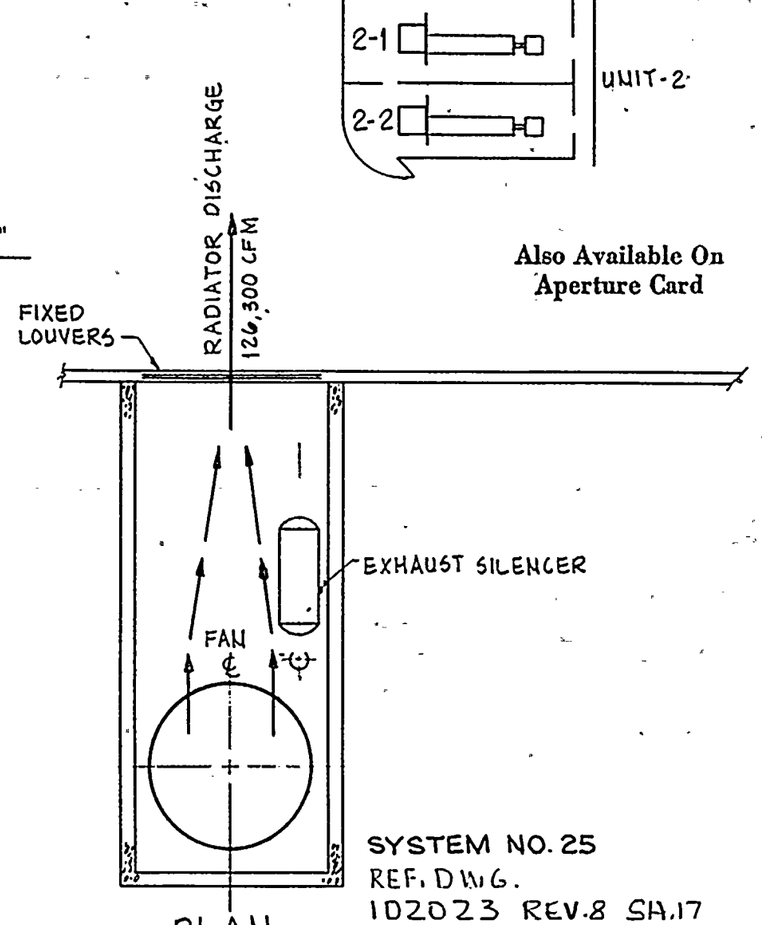
DIESEL ENGINE-GENERATOR	ELEV.	ZONES		
		1-1(2-2)	1-2(2-1)	1-3
ENGINE-GENERATOR	85'	11-A-1 (22-A-1)	11-B-1 (22-B-1)	11-C-1
RADIATOR & FAN	85'	11-A-2 (22-A-2)	11-B-2 (22-B-2)	11-C-2
SILENCER & FIXED LOUVER	107'	ABOVE 11-A-2	ABOVE 11-B-2	ABOVE 11-C-2



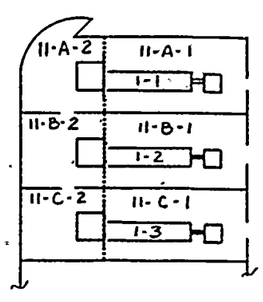
SECTION 1-1



PLAN TYPICAL
EL. 85'-0



PLAN
EL.107'-0"



TURBINE GENERATOR BUILDING

TI APERTURE CARD

Also Available On Aperture Card

SYSTEM NO. 25
REF. DWG.
102023 REV.8 SH.17

PG&E CO.	107195	REV.
SHEET 60 OF SHEETS	MICROFILM	1

RM INDEXED REV.

61-4451 3-79

E10 | E11 | E12 | E13 | E14 | E15 | E16 | E17 | E18 | E19

E
D
C
B
A

FUEL HANDLING BUILDING

AUXILIARY BUILDING

FUEL HANDLING BUILDING

CONTAINMENT STRUCTURE

CONTAINMENT STRUCTURE

TURBINE BUILDING

TURBINE BUILDING

INTAKE STRUCTURE

UNIT 1

UNIT 2

TO OUTSIDE FUEL HANDLING BLDG. EL. 115' FOR UNITS 1&2

TO INSTRUMENT REPAIR SHOP AUX BLDG. EL. 140'-0"

TO VENTILATION ROOM & AUX. BOILER ROOM EL. 85'-0"-89'-0"

TO SPENT FUEL POOL SUMP PIT K-1658-1

TO CASK DECONTAMINATION AREA

TO AUXILIARY CONTROL BOARD

TO DRUMMING STATION

TO WELDING SHOP

TO MACHINE SHOP

IN HOT SHOP

IN ELECTRIC SHOP

STORAGE TANKS

SOLID RADWASTE EL. 93'

REFER TO DWG. 049096 FIG. 606

FILTER PACKAGING STATION AIR PANEL

TYPICAL CONTAINMENT PENETRATION

PROVISION FOR PORTABLE COMPRESSOR

PROVISION FOR FLEXIBLE COMPRESSOR

INSTRUMENT AIR BACK-UP RECEIVER 1-1 DC-663008-2

INSTRUMENT AIR BACK-UP RECEIVER 2-1 DC-663008-2

INTAKE STRUCTURE AIR REC. 0-1 DC-663008-3

SEAWATER DESIGN SYS. (23-01 TO 23-04)

FROM PLANT AIR RECEIVERS

TO UNIT 1 & UNIT 2

TO UNIT 1

TO UNIT 2

INSTR. AIR

SERVICE AIR

SERVICE AIR RISER

INSTR. AIR RISER

SERVICE AIR RISER EAST

SERVICE AIR RISER WEST

CONTAINMENT PENETRATION

ISOLATION FLANGE (TYP OF 2)

INSULATING FLANGE

PLASTIC PIPE

VALVE

CRANE WALL

SEE NOTE 6 SHT 6

SEE NOTE 1 SHT 3

SEE ISOMETRIC FOR DETAILS SHEETS 5 & 6

OPEN TO DEFLATE SEALS

(TYP) 150# FLANGE

DEFLATE SEALS

SET AT 25 PSI

SET AT 45 PSI

RV-149

PCV 149

FCV-584

FCV-564

FCV 144

RV 242

RV ELECT. DWG. NO. 57576

RV241

PCV 143

FCV 143

SYSTEM NO. 31

REF. DWG.

106725 REV. 2 SH. 3

102025 REV. 7 SH. 4

Also Available On Aperture Card

TI APERTURE CARD

35 M/M

NOTE

45B—① TYPICAL, ALL INSTRUMENT AIR HEADER VALVES, WITH LINE SPEC. "C" ARE R-0182. ALL 2 1/2" AND ABOVE SERVICE AIR HEADER VALVES, WITH LINE SPEC. "K" ARE R-0181. 2" AND BELOW SERVICE AIR VALVES ARE R-0180 EXCEPT AS NOTED.

2. ALL VALVES WITH ITEM NO'S. ARE UNDER SPEC. 8729 REFER TO PG&E DWG. NO. 102039 EXCEPT AS NOTED.

3 CLASS 1 AIR SUPPLY TO FCV-679 (PNL 125) & FCV-681 (PNL 125) (42-C)

4. CLASS 1 AIR SUPPLY TO FCV-683 (PNL 125) & FCV-678 (PNL 125) (41-C)

5. ACCUMULATOR TANK SHALL BE FABRICATED BY KELLOGG UNDER SPEC. 8718.

REFER TO DWG. 053291 SHT 4 (41-B)

6. INSTRUMENT CLASSIFICATION (41-B)

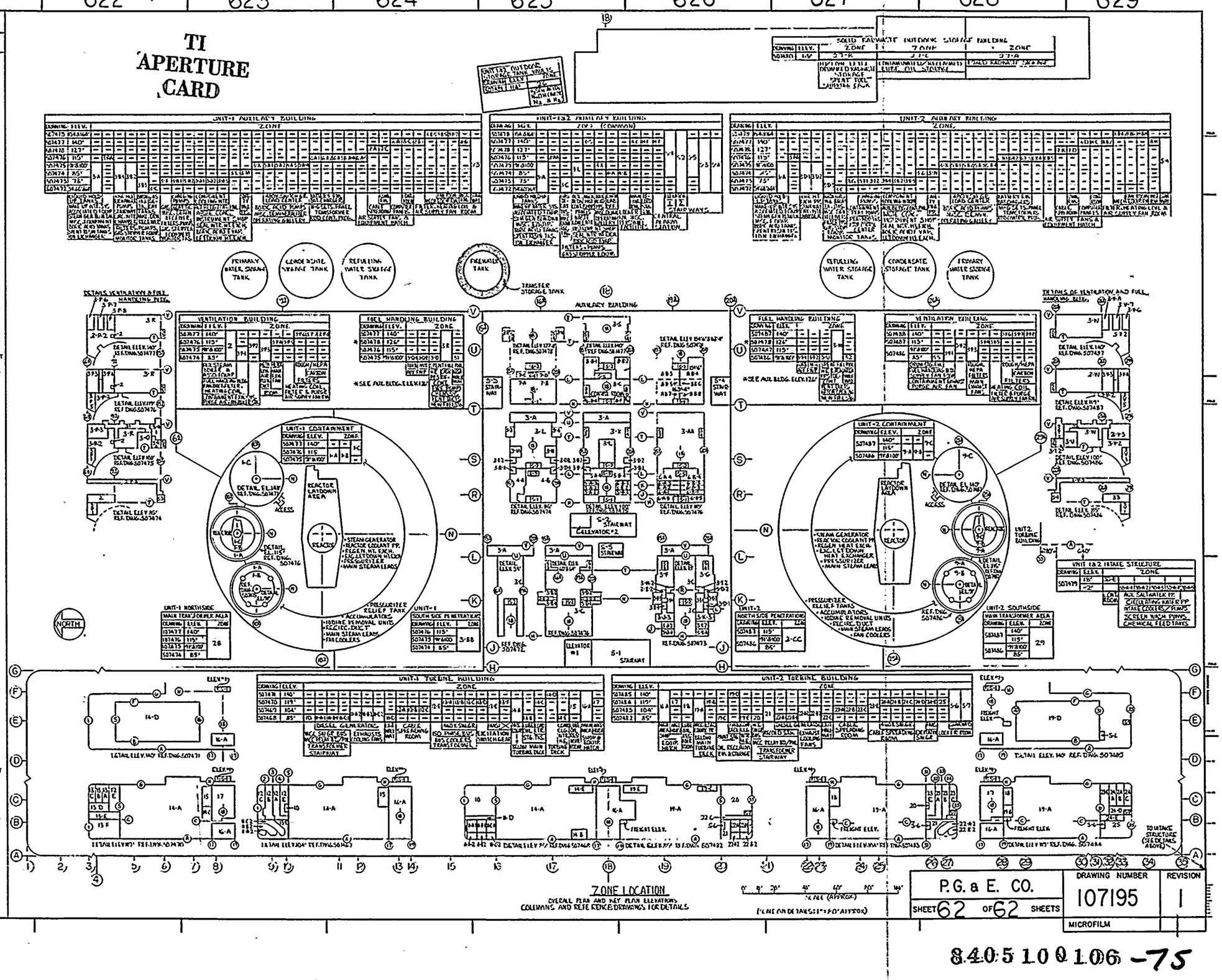
P. G. & E. CO.	DRAWING NO.	CHANGE
SHEET 61 OF SHEETS	107195	1

8405100106-74

620 | 621 | 622 | 623 | 624 | 625 | 626 | 627 | 628 | 629

ZONE PLANT LOCATION

ZONE	ELEVATION	UNIT	MAIN EQUIPMENT	BUILDING
1-A 2-1-B	99'-115'	1	ACCUM./STM. GEN. FANS	CONTAINMENT
1-C	115'&140'	1	REACTOR	CONTAINMENT
2	85'	1	AUX. STEAM BOILER	VENTILATION & EQ.
3-A	60'-100'	1&2	HOLD UP TANKS	AUXILARY BUILDING
3-B 3-C 3-D 3-E	54'-100'	1	RHR HT. EXCH.	
3-B-3	54'-73'	1	BORON INJECTION TANK	
3-C	64'-73'	1&2	MISC. DRAIN RECEIVER	
3-D 3-E 3-D-2	54'-100'	2	RHR HT. EXCH.	
3-D-3	64'-73'	2	BORON INJECTION TANK	
3-F	73'	1	CNT. SPRAY PP./TANK	
3-G	73'	2	CNT. SPRAY PP./TANK	
3-H 3-H-2	73'	1	CHARGING PUMP	
3-1 3-1-2	73'	2	CHARGING PUMP	
3-J-1 — 3-J-3	73'	1	CCW PUMPS	
3-K-1 — 3-K-3	73'	2	CCW PUMPS	
3-L	85'-100'	1&2	BORIC ACID EVAP.	
3-M	85'	1	SAFETY INJECTION PUMPS	
3-N	85'	2	SAFETY INJECTION PUMPS	
3-O	99'-100'	1	SPENT FUEL POOL	FUEL HANDLING BLDG.
3-P-1	85'-100'	1	FAN ROOM	VENTILATION BLDG.
3-P-2	85'-115'	1	CONTAINMENT VENT	
3-P-3	85'-115'	1	EXH. FAN/FILTERS	
3-P-4 & 3-P-5	115'	1	PURGE AIR FAN/FILTERS	
3-P-6 — 3-P-8	140'	1	VENT FAN/FILTER	
3-Q-1 & 3-Q-2	100'	1	AUX FEED WATER PUMP	FUEL HANDLING BLDG.
3-R	99'&140'	1	NEW & SPENT FUEL	
3-S	140'	1&2	HOT SHOP	AUXILARY BUILDING
3-T 3-T-2	100'	2	AUX FEED WATER PUMP	FUEL HANDLING BLDG.
3-U	100'	2	SPENT FUEL PP./HT. EXCH.	
3-V-1	85'-100'	2	FUEL HANDG. BLDG. FAN RM.	VENTILATION BLDG.
3-V-2	85'-128'	2	CONTAINMENT VENT	
3-V-3	85'-115'	2	EXH. FAN/FILTERS	
3-V-4 & 3-V-5	85'	2	PURGE AIR FAN/FILTERS	
3-W & 3-W-2	140'	2	VENT FANS/FILTERS	
3-W	99'&140'	2	NEW & SPENT FUEL	FUEL HANDLING BLDG.
3-X	100'	1&2	BORIC ACID PP./FILTER & MISC. DEMINERALIZER	AUXILARY BUILDING
3-AA	115'	1&2	BORIC ACID TANKS	
3-BB	85'-115'	1	PENETRATION AREA	OUTSIDE CONTAINMENT
3-CC	85'-115'	2	PENETRATION AREA	OUTSIDE CONTAINMENT
4-A & 4-B	85'	1&2	CHEM. LAB & LOCKER RM.	AUXILARY BUILDING
5-A 5-B 5-C	100'	1	480V. SWITCHGEAR	
5-D 5-E 5-F	130'	2	480V. SWITCHGEAR	
5-G 5-H & 5-K	115'	1	BATTERY ROOM & RED CONT.	
5-J 5-L & 5-S	115'	2	BATTERY ROOM & RED CONT.	
7-A & 7-C	127'	1	CABLE SPREADING ROOM	
7-B & 7-D	127'	2	CABLE SPREADING ROOM	
8-A & 8-B	140'	1	COMPUTER RM. VENT RM.	
8-B-2	140'	2	VENT ROOM	
8-B-3	154'	1	MECH. EQUIP. ROOM 1	
8-B-4	154'	2	MECH. EQUIP. ROOM 2	
8-B-5 & 8-B-7	163'	1	FAN ROOM	
8-B-6 & 8-B-8	163'	2	FAN ROOM	
8-C	140'	1&2	MAIN CONTROL ROOM	
8-D	140'	2	COMPUTER ROOM	
8-E & 8-F	140'	1&2	RECORD STG./CENTRAL ALARM	
8-G & 8-H	140'	1&2	INSTRUMENT ROOM	
9-A & 9-B	98'&115'	2	STEAM GENERATORS	CONTAINMENT
9-C	115'&140'	2	REACTOR	TURBINE BUILDING
10	85'&104'	1	MISC. SWITCHGEAR	
5-M & 5-M-1 & 5-K	85'	1	DIESEL GEN. 1-1 & 1-2-3	
5-N 5-N-2 & 5-N-3	104'	1	DIESEL GEN EXHAUST	
11-D	25'	1	HALLWAY	
12-A, B, C & E	104'	1	CABLE SPREADING RM.	
13-A & C & F	119'	1	4160 V. SWITCHGEAR	
13-G	104'-115'	1	SWITCHGEAR VENT FAN	
14-A	85'-119'	1	MISC. EQUIP. BELOW TURB.	
14-B	85'	1	LUBE OIL STORAGE TANKS	
14-C	119'	1	LOAD CENTER	
14-D	140'	1	TURBINE DECK	
14-E	85'	1	CCW HEAT EXCHANGER	
15	104'-119'	1	LUBE OIL RESERVOIRS	
16-A	85'-140'	1&2	MACHINE SHOP	
17	119'	1&2	WAREHOUSE	
18	104'-119'	2	LUBE OIL RESERVOIRS	
19-A	85'-119'	2	MISC. EQUIP. BELOW TURB.	
19-B	119'	2	LOAD CENTER	
19-C	85'	1&2	OIL RECLAIM ROOM	0-2 TURBINE BLDG.
19-D	140'	2	TURBINE DECK	TURBINE BUILDING
19-E	85'	2	CCW HEAT EXCHANGER	
20	85'	2	MISC. SWITCHGEAR	
21	85'	1&2	ESCORTS STORAGE	
22-A 1 & 2 & 2-1	85'	2	DIESEL GENERATOR 21 & 22	
22-A & 2-2-B & 2	85'-104'	2	DIESEL GEN EXHAUST	
22-C	85'	2	HALLWAY	
23-A, B & C	104'	2	CABLE SPREADING ROOM	
23-E	104'-119'	2	ISO PHASE BUS	
24-A, C, D & E	119'	2	4160 KV SWITCHGEAR	
25	119'	1&2	TRAVELING CREW ENTRANCE	
26	115'	1&2	GAS & CHEMICAL STORAGE	OUTDOOR STORAGE
27-A, B & C	115'	1&2	MISC. METAL TANKS & OIL	OUTSIDE CONTAINMENT
28	104'-140'	1	MAIN TRANSFORMER	
29	85'-140'	2	MAIN TRANSFORMER	
30-A 1 & 2 & 0-2	-2'	1	RES. SALT WATER PUMPS	INTAKE STRUCTURE
30-A 3 & 3 & 0-A-4	-2'	2	RES. SALT WATER PUMPS	
30-A-5	-2'	1&2	CIRCULATING WATER PP.	
30-B	15'	1&2	INTAKE WATER CONTROL RM.	
31 & 32	100'	1&2	HALLWAY	FUEL HANDLING BLDG., 0-2 VENTILATION BLDG., AUXILARY BUILDING
33	85'	1&2	DRUM STORAGE ROOM	
S-1	85'-140'	1&2	ELEVATOR #1 / STAIRWAY	
S-2	64'-140'	1&2	ELEVATOR #2 / STAIRWAY	
S-3, S-4, S-5	64'-140'	1&2	STAIRWAY	
S-6 & S-7	85'-140'	2	STAIRWAY	TURBINE BUILDING



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ATTACHMENT 13

TO THE PGandE

SEISMICALLY INDUCED SYSTEMS INTERACTION PROGRAM

FINAL REPORT

COMPUTERIZED IDS SUMMARIES

This attachement contains the computerized summaries of all the Interaction Documentation Sheets (IDSs) written by the SISIP Site Evaluation Team.

NOTE: This attachment will be provided at a later date and will consist of three or more volumes of information.