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RECIP.NAME RECIPIENT AFFILIATION
ZIEMANN,D.L. OPERATING REACTORS BRANCH 2
SYSTEMATIC EVALUATION PROGRAM.
SUBJECT: PROVIDES ADDL SEISMIC INFO REQUESTED BY NRC SEISMIC REVIEW TEAM.FORWARDS INFO ON PLANT STRUCTURAL DESIGN EXCEPT FOR DETAILS OF CONTAINMENT & INTERNAL STRUCTURES.DYNAMIC MODEL AUXILIARY BLDG & 5 OVERSIZE DRAWINGS ENCL. See Top Shelf.

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LEON D. WHITE, JR.
VICE PRESIDENT

TELEPHONE
AREA CODE 716 546-2700

May 7, 1979

Director of Nuclear Reactor Regulation
Attention: Mr. Dennis L. Ziemann, Chief
Operating Reactors Branch No. 2
U.S. Nuclear Regulatory Commission
Washington, D.C. 20555

Subject: Systematic Evaluation Program Seismic Review
R.E. Ginna Nuclear Power Plant
Docket No. 50-244

Dear Mr. Ziemann:

During the site visit by the NRC Seismic Review Team, members of the Team requested that we provide additional information on the design and construction of Ginna Station. Attached to this letter is information regarding the structural design of Ginna except for details of the containment and its internal structures. The containment information is currently being assembled and will be provided shortly.

Fifty-five structural framing drawings showing framing details, layout of walls, and foundation details are being sent under separate cover. A list of these drawings is enclosed as Attachment 1.

Three drawings (044824-001, 044824-002, and 044824-003) showing locations and cross sections of steel bracing systems are being sent under separate cover.

A description of a dynamic model of the Auxiliary Building including lumped masses, design loads, and member properties is enclosed as Attachment 2. This model was developed earlier by our architect engineer, Gilbert Associates.

ROCHESTER GAS AND ELECTRIC CORP. SHEET NO.

DATE May 7, 1979

TO Mr. Dennis L. Ziemann, Chief 2
Operating Reactors Branch No. 2

As requested by your Staff, we are supplying eight copies of this letter and attached descriptive material, three copies of each of the drawings, and one aperture card for each drawing. If there are any questions regarding this material, please contact us.

Very truly yours,

L.D. White, Jr.

Attachments

ATTACHMENT 1

Lists of Structural Framing Drawings

Architectural	Remarks
D-102-051	Wall elevations
D-102-052	Do
D-102-053	Do
D-102-054	Do
D-102-055	Do
D-102-056	Do
D-102-057	Do
Auxiliary Building	
D-522-001	Column schedule and bracing
D-522-031	Stair details and misc. platform
D-522-033	Platform - sections and details
D-522-041	Roof steel framing
Facade Structures	
D-521-071	Col. schedules, horizontal trusses
D-521-072	and vertical bracing system
D-521-073	Do
D-521-074	Do
Intermediate Building	
D-422-503	Concrete slab at El. 253'-6"
D-422-504	Concrete foundation and retaining wall
D-523-011	Column schedule and plan
D-523-021	Steel framing, El. 271' and 278'-4"
D-523-022	Steel framing, El. 293' and 298'-4"
D-523-023	Steel framing, low roof and El. 315'-4"
D-523-051	Roof framing
Service Building	
D-531-001	Column schedule and plan
D-531-002	Roof and floor steel
D-531-003	Bracing at "3" line
Turbine Building	
D-502-011	Column schedule
D-502-021	Floor framing
D-502-022	Floor framing
D-502-051	Roof framing
D-502-052	Roof bracing
D-502-061	Vertical bracing system
D-502-062	Do
D-502-063	Do
D-502-065	Do
D-502-066	Do
D-502-067	Do

Control Building

D-403-065	Concrete foundation
D-403-066	Concrete walls
D-403-067	Concrete walls
D-502-023	Steel framing

Diesel Generator Building

D-403-051	Concrete foundations
D-403-052	Concrete foundations
D-405-015	Concrete walls
D-502-075	Roof framing
D-502-076	Column schedules

Additional Drawings

Auxiliary Building

D-001-013	Layout drawings for wall
D-001-023	Location within concrete
D-001-033	Structures

Service Building

D-131-002	Interior wall
D-131-003	Do
D-431-001	Concrete slab and foundation details
D-431-002	Do
D-431-003	Do
D-431-004	Do

ATTACHMENT 2

GILBERT ASSOCIATES, INC. ENGINEERS AND CONSULTANTS READING, PA.	DEPARTMENT NAME: STRUCTURAL ENGINEERING	DEPT. NO.: 0414	FILING CODE: 1:36-1
	PROJECT NAME: GINNA STATION	W.O. NUMBER: 04 4824 000	PAGE 4

SUBJECT: SEISMIC EVALUATION - AUXILIARY BUILDING MODEL

ORIGINATOR: D. BISS
DATE: 4/26/79

VERIFIER: P.C. SHAH
DATE: 4/27/79

THE FOLLOWING SIX (6) PAGES PRESENT THE MODEL OF THE AUXILIARY BUILDING DEVELOPED FOR GENERATION OF FLOOR RESPONSE SPECTRA. DEVELOPMENT OF THE MODEL CONSIDERED THE ECCENTRICITY BETWEEN THE MASSES AND STIFFNESS ELEMENTS WITHIN THE AUXILIARY BUILDING. COUPLING OF THE STEEL SUPER-STRUCTURE AND CONCRETE SUBSTRUCTURE WITH THE ADJOINING BUILDINGS WAS NOT CONSIDERED IN THE DEVELOPMENT OF THE MODEL.

FILING CODE

SUBJECT: SEISMIC EVALUATION - AUXILIARY BUILDING MODEL

ORIGINATOR: D. BISS
DATE: 4/18/79
VERIFIER: P.C. SHAH
DATE: 9-27-79

Mass Node		Location X (E-W)	Y (Vert)	Z (N-S)	Weight k	Mass k-sec²/ft
1	Basement	111.72'	235.67	-34.78	12,775	396.74
2	Int. Flr.	114.91'	252.0	-31.03	11,960	371.43
3	Op. Flr.	109.84'	270.0	-29.82	12,910	400.93
4	Platform	120.74'	283.83	-10.76	49.3	1.53'
5	High Roof	86.09'	328.0	-29.09	343.4	10.66
6	Low Roof	178.5'	312.0	-36.92	141.7	4.40

LUMPED MASSES

ADDITIONAL MASSES DUE TO SNOW

HIGH ROOF

276.2k, 8.58 $\frac{k\text{-sec}^2}{ft}$

LOW ROOF

198.3k, 6.16 $\frac{k\text{-sec}^2}{ft}$

NOTE:

THE ABOVE MASSES INCLUDE THE WEIGHT OF ALL STRUCTURAL COMPONENTS AND PERMANENT EQUIPMENT. MASS 5 INCLUDES CONTRIBUTORY MASSES OF THE FACADE STRUCTURE ALONG (N) LINE.

FILING CODE

GILBERT ASSOCIATES, INC. ENGINEERS AND CONSULTANTS READING, PA.	DEPARTMENT NAME: STRUCTURAL ENGINEERING	DEPT. NO.: 0414	FILING CODE: 1.36.1
	PROJECT NAME: GINNA STATION	W.O. NUMBER: 04-4824-000	PAGE 17

SUBJECT: SEISMIC EVALUATION - AUXILIARY BUILDING MODEL

ORIGINATOR: D. BISS

DATE: 4/18/79

VERIFIER: P.C. Shah

DATE: 4-20-79

MEMBER	MEMBER COORDINATES X (E-W)	Z (N-S)	Y (VERTICAL) START	Y (VERTICAL) END
1	112.92	-29.35	235.67	251.0
2	113.35	-29.09	253.0	269.0
3	40.25	0.0	278.3	326.0
4	92.92	0.0	271.0	326.0
5	150.5	0.0	271.0	310.0
6	40.25	-46.0	278.3	326.0
7	92.92	-46.0	271.0	326.0
8	150.5	-70.75	271.0	311.5
9	0.0	-70.38	253.5	327.5
10	137.67	-58.38	271.0	312.0
11	137.67	-58.38	312.0	327.5
12	214.42	-61.91	271.0	311.5
13	120.74	-10.76	271.0	283.83

STRUCTURAL GEOMETRY

FILING CODE

SUBJECT: SEISMIC EVALUATION - AUXILIARY BUILDING MODEL

ORIGINATOR: D. BISS
DATE: 4/18/79
VERIFIER: K. Shaw
DATE: 4/27/79

Properties of the concrete wall systems between the basement level (EL 235'-9"), Intermediate level (EL 253'-0") and operating level (EL 271'-0") were determined with respect to the center of rigidity for each wall system.

Equivalent member properties for braced steel frames considered effective within the auxiliary building, were obtained in accordance with the following procedure:

i) Individual braced frames were isolated and a unit load applied to the frame at the level of the desired response (ie roof level or platform level).

ii) The elongation of the vertical column members due to the unit load was equated to the end deflection of a cantilever member having the same height of the braced frame and subjected to a concentrated load at the free end. The equavalent moment of inertia was obtained from the equation

$$\Delta = \frac{PL^3}{3EI}$$

iii) The elongation of the diagonals and horiz. members of the braced frame were equated to the shear deformation of a cantilever. Equivalent shear areas were obtained from the equation

$$\Delta = \frac{1.2VL}{AG}$$

iii) An equivalent axial area was obtained by summing the cross sectional area of the vertical columns within the braced bay.

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GILBERT ASSOCIATES, INC.
ENGINEERS AND CONSULTANTS
READING, PA.

DEPARTMENT NAME: STRUCTURAL ENGINEERING
DEPT. NO.: 0414
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PROJECT NAME: GINNA STATION
W.O. NUMBER: 04 4824 000
PAGE 9

SUBJECT: SEISMIC EVALUATION - AUXILIARY BUILDING MODEL

ORIGINATOR: D. BISS
DATE: 4/19/79
VERIFIER: R Shah
DATE: 4-27-79

MEMBER PROPERTIES

MEMBER	MATERIAL	Ax ft²	Ay ft²	Az ft²	Iz ft⁴	Iy ft⁴	Ix ft⁴
1	CONCRETE	3200.5	1760.4	1440.1	14,933,257	1,456,734	150,900
2	CONCRETE	3436.8	17417.6	1689.2	16,147,691	1,525,647	152,900
3	STEEL	0.6875	0.0175	0.0	123.09	0.0	0.0
4	"	0.4583	0.0217	0.0	191.35	0.0	0.0
5	"	0.1509	0.0177	0.0	19.44	0.0	0.0
6	"	0.8896	0.0456	0.0	100.88	0.0	0.0
7	"	0.5931	0.0477	0.0	86.62	0.0	0.0
8	"	0.2370	0.0330	0.0	20.25	0.0	0.0
9	"	0.1103	0.0	0.0610	0.0	96.98	0.0
10	"	0.4044	0.0	0.0395	0.0	55.28	0.0
11	"	0.4044	0.0	0.0395	0.0	55.28	0.0
12	"	0.3636	0.0	0.0149	0.0	6.45	0.0
13	"	0.76	0.0339	0.0123	70.38	2,045	0.01

Ax = AXIAL AREA
Ay = SHEAR AREA, E-W
Az = SHEAR AREA, N-S
Ix = TORSIONAL STIFF.
Iy = BENDING STIFF. N-S
Iz = BENDING STIFF, E-W

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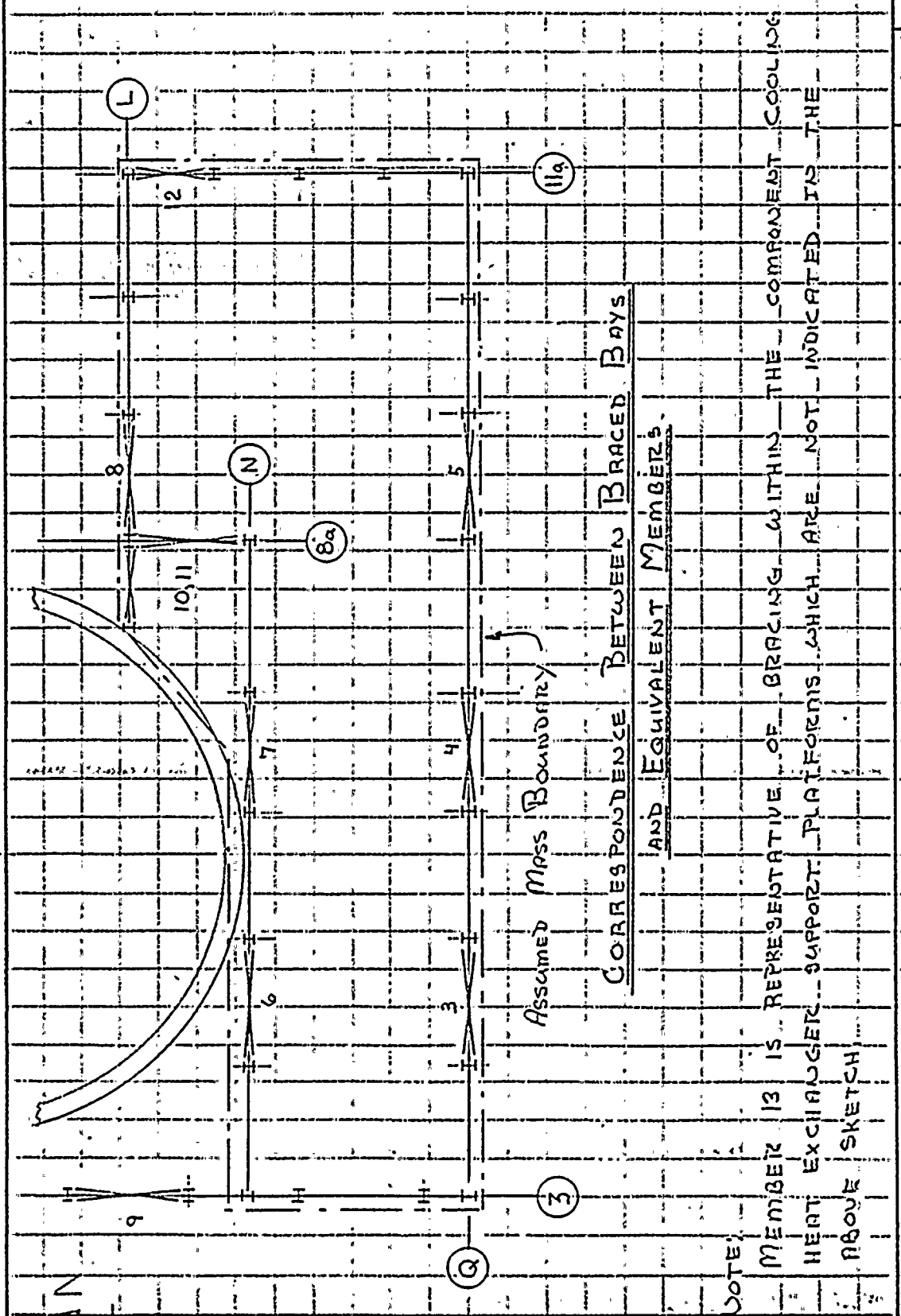
GILBERT ASSOCIATES, INC. ENGINEERS AND CONSULTANTS READING, PA.	DEPARTMENT NAME: STRUCTURAL ENGINEERING	DEPT. NO.: 0414	FILING CODE: 1:36.1
	PROJECT NAME: GINNA STATION	W.O. NUMBER: 04 4824 000	PAGE: 10

SUBJECT: SEISMIC EVALUATION - AUXILIARY BUILDING MODEL

ORIGINATOR: D. BISS
DATE: 4/26/79
VERIFIER: [illegible]
DATE: 4/27/79



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SEISMIC MODEL	ENG D. BISE	WORK ORDER / SIZE / DRAWING / REV.	
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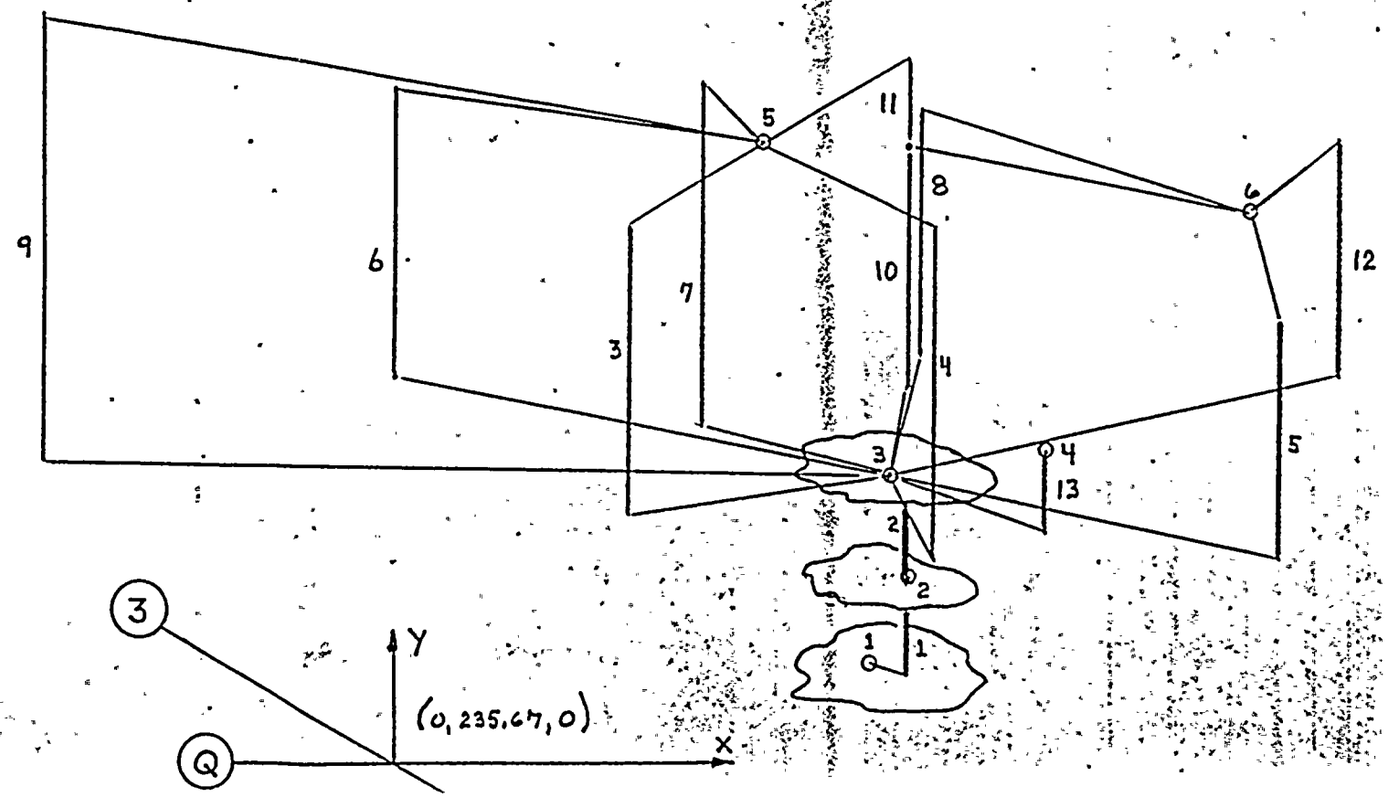
o MASS POINT

| STIFFNESS MEMBER



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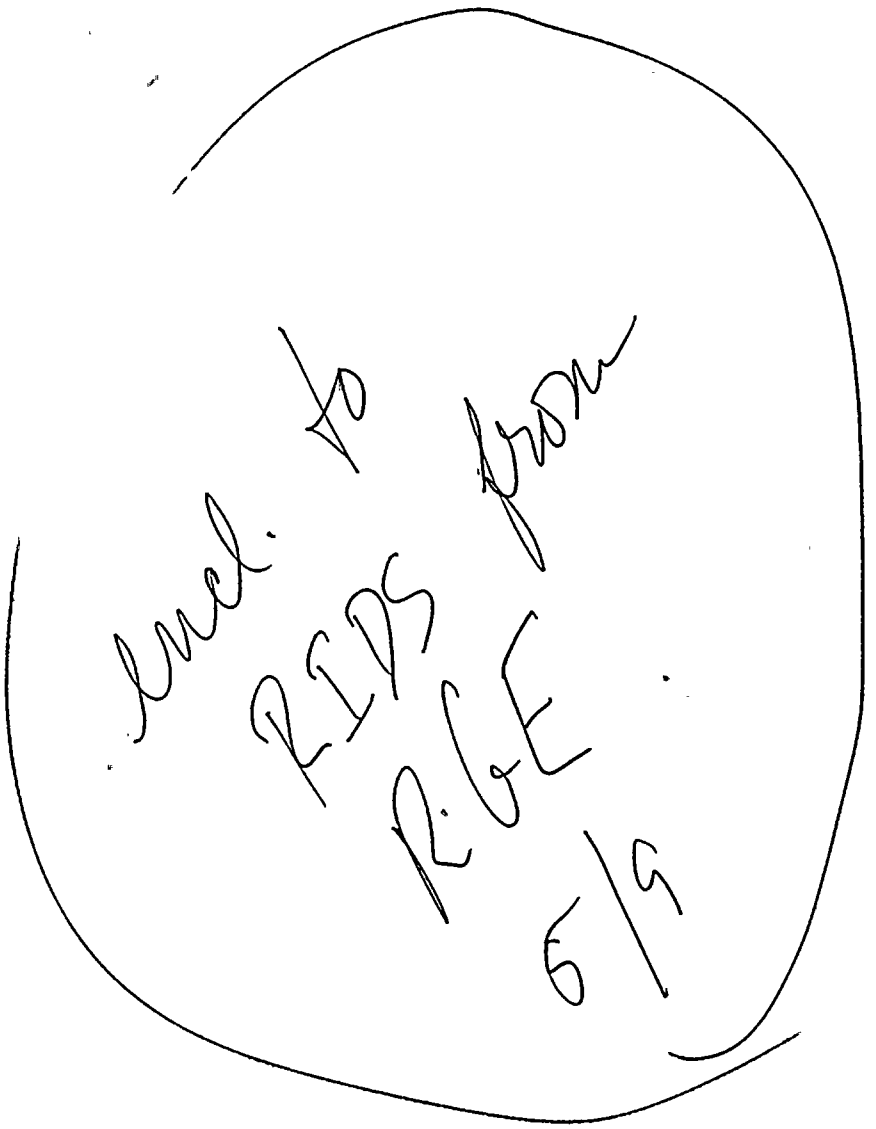
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