all done

(3) general findings and comments

1. Sokaloff → (h.) modeling of hydrodynamic effects in spent fuel pool

DDE : Vol II, Page 130-177. Horiz = 1.2g. Vert = 0.8g
(Vol II Page 177-2 thru 177-29)

1.S → (i.) modeling of spent fuel pool (walls) and interior floor slabs and equipment thereof

See answer on "h" + Dcs. Comp- Vol. 12

Set up calculation has been provided to the Reg. during the audit. Okd

More information on page 21 (audit).

PACIFIC GAS AND ELECTRIC COMPANY

SHEET NO. ____ OF ____ SHEETS

GENERAL COMPUTATION SHEET

JOB FILE NO. ____

LOCATION ____

SUBJECT Summary of hydrodynamic effect in Spent Fuel Pool Auxiliary Building / Diablo Canyon Units 1 & 2

MADE BY T. Wei DATE ____ CHECKED BY ____ APPROVED BY ____

FORCES & MOMENTS

Impulsive force due to constrained fluid ---------- 2,210 K
(acting on Spent Fuel Pool wall @ El. 113.4'

Corrective force due to oscillating fluid
(acting on spent Fuel Pool wall @ El. 123.2' ---------- 350 K

Moment at critical section (@ base of wall) ---------- 1,187 ft-kip/ft

CAPACITY & SAFETY MARGIN

Capacity of Spent Fuel Pool to withstand earthquake ------ 2.09 g
of magnitude

Safety Margin (assume applied acceleration of 1.0g) ------ 2.09

Check Copy

PACIFIC GAS AND ELECTRIC COMPANY

GENERAL COMPUTATION SHEET

SHEET NO. 1 OF 29 SHEETS

JOB FILE NO.

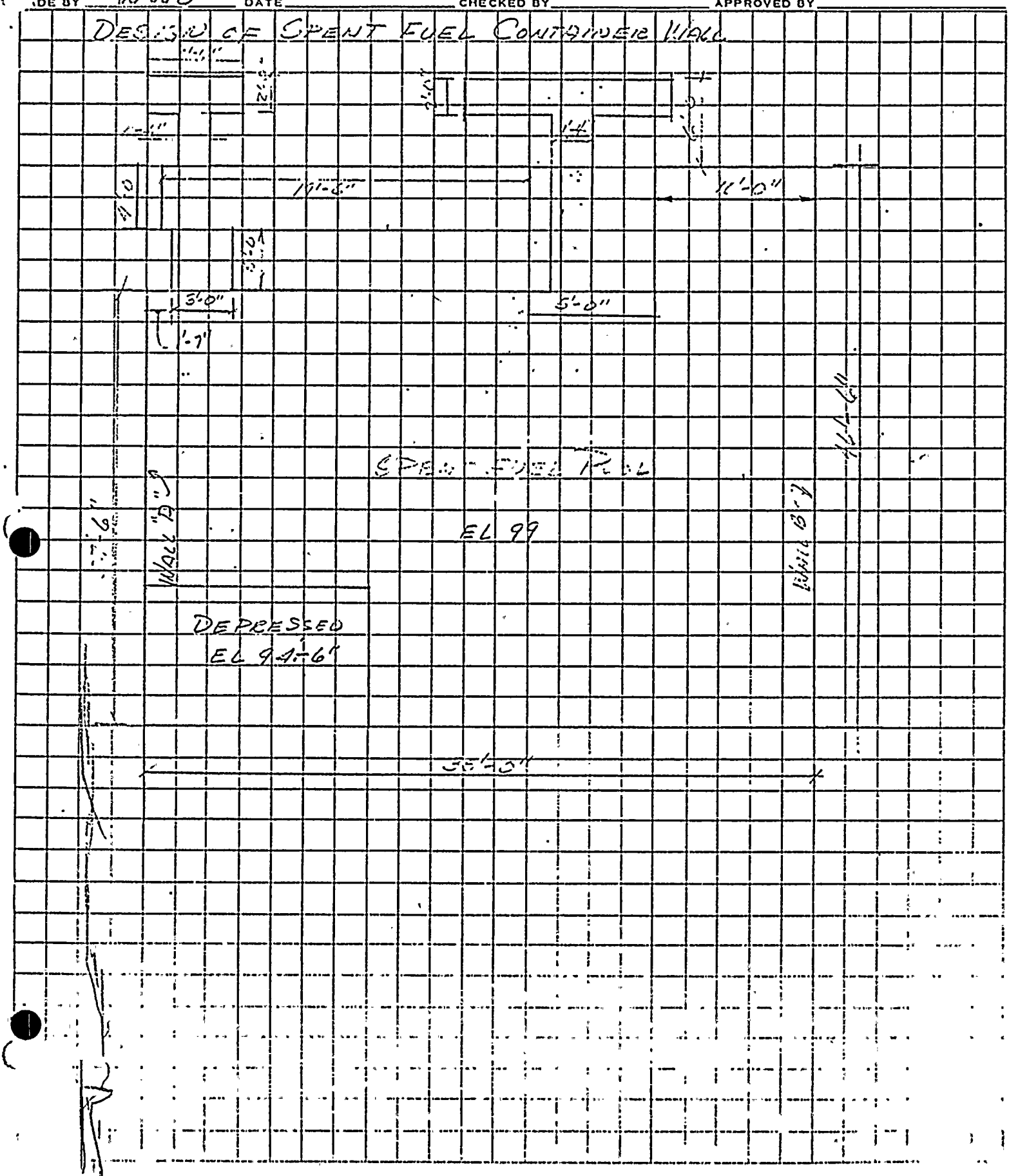
LOCATION

SUBJECT DIABLO CANYON SPENT FUEL TANK DESIGN

AUXILIARY BUILDING

DE BY WWO DATE CHECKED BY APPROVED BY

DESIGN OF SPENT FUEL CONTAINER WALL



62-4713 5/65

PACIFIC GAS AND ELECTRIC COMPANY

GENERAL COMPUTATION SHEET

SHEET NO. 1 OF 13 SHEETS

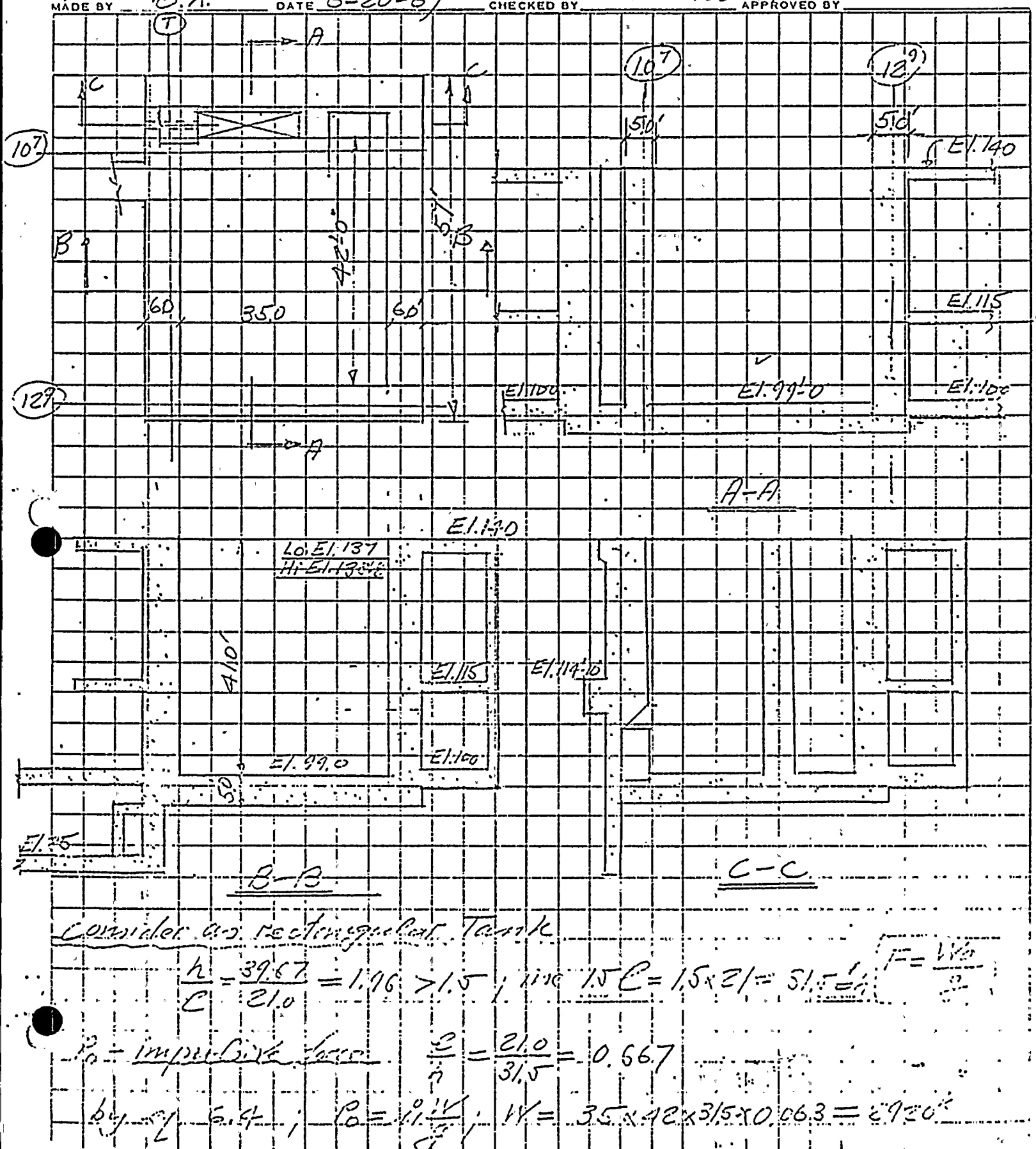
JOB FILE NO.

LOCATION

SUBJECT Diablo Canyon Aux. Bldg. Cr. 1 page 1 of 13

Circ. Conc. Tank DWG. 438455 438474

MADE BY G.K. DATE 6-20-69 CHECKED BY APPROVED BY



Consider as rectangular Tank

$\frac{h}{C} = \frac{39.67}{21.0} = 1.96 > 1.5$; use $1.5C = 1.5 \times 21 = 31.5'$ $\quad F = \frac{W_0}{2}$

W_0 = Impulsive force $\quad \frac{C}{h} = \frac{21.0}{31.5} = 0.667$

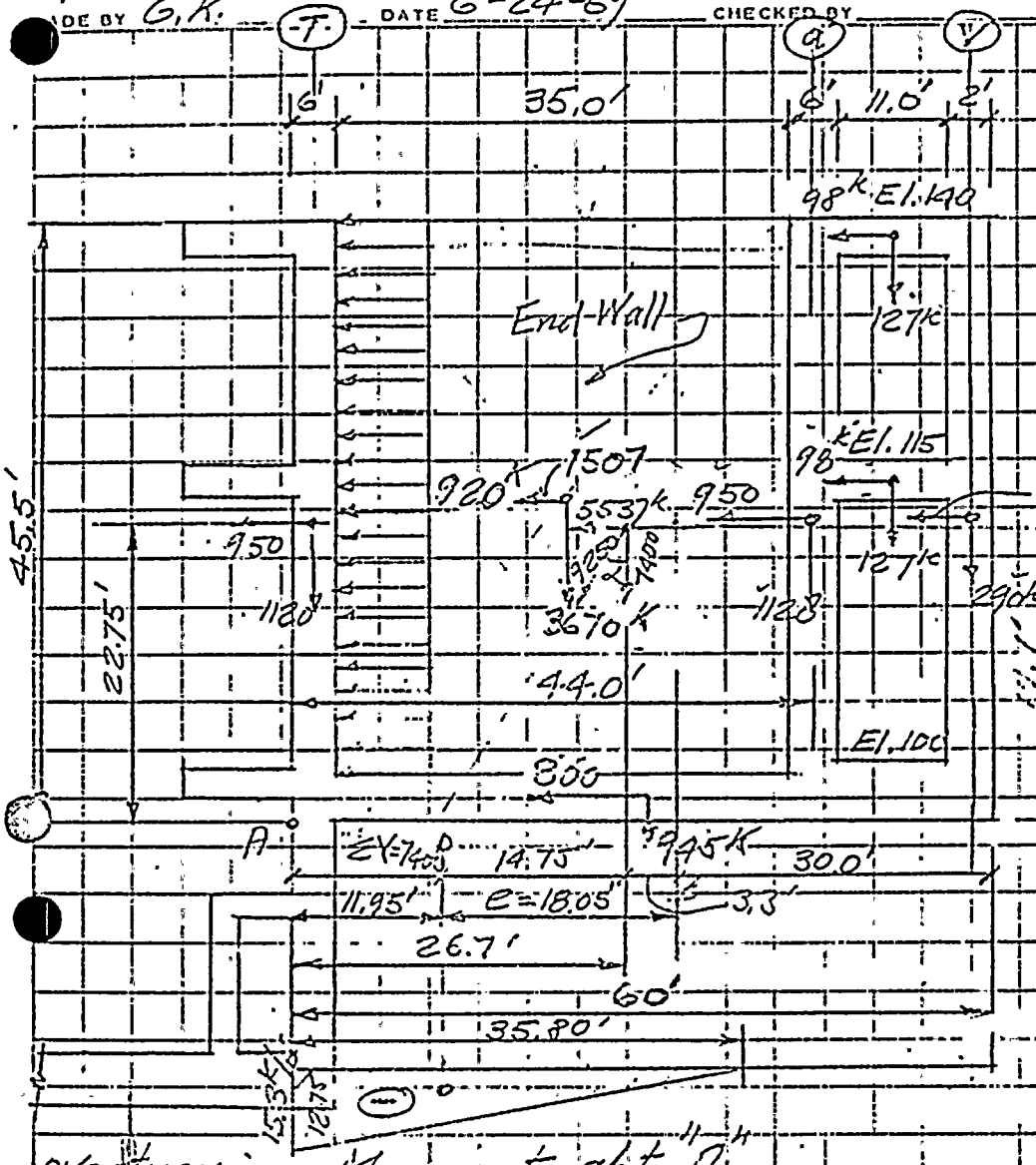
by Fig 6.4, $\frac{P_0}{\gamma h^2} = 0.063$, $W = 35 \times 42 \times 31.5 \times 0.063 = 2920^k$

GENERAL COMPUTATION SHEET

JOB FILE NO. ____ LOCATION ____

SUBJECT Diablo Canyon Aux. Bldg. Gr. 1 Page 5 of 13
Spent Fuel Unit

DE BY G.K. (T) DATE 6-24-69 CHECKED BY (a) (V) APPROVED BY



Seismic Forces
End Wall 1235
Spent Fuel cartridges 272
1507k
Side Walls 950k each
Bottom 800k

Wall on (Y) k
21 x 40 x 0.3 x 0.85 = 214

floor @ El. 140 & El. 115
11 x 21 x 0.55 x 0.85 = 98.0

Gravity Loads
Water: 21 x 35 x 41 x 0.062 = 1900
Spent fuel cartridges 200 x 1.6 = 320
End Wall: 35 x 46 x 0.90 = 1450
3670k

Side wall: 27 x 46 x 0.9 = 1120k
Wall (V) 21 x 46 x 0.3 = 290k

Floors: 11 x 21 x 0.5 = 127k
bottom: 42 x 60 x 1.5 = 945k
2

for 1/2 Tank only
Tributary to end wall

Overturning Moment abt. A

950 x 2 = 1900
1507
3407 x 22.75 = 77500
920 x 20 = 18,400
800 x 2.5 = 2,000
214 x 22.75 = 4870
980 x 44 = 4300
980 x 19 = 1860
ΣH = 537 (M_OT = 103,930)

945 x 30 = 28,400
1120 x 3 = 3360
3670 x 23.5 = 86,400
1120 x 44.0 = 49,300
290 x 59.0 = 17,100
254 x 52.5 = 13,300
ΣV = 7399 197,860 = M_R

5537 = 30,000cc
7400 = 54,706,000cc
√25,306,000cc = 9175
tan α = 553/9175 = 0.6
sin α = 7400/9175 = 0.8
α = 0.75
x = 0.75 x 14.75 = 18.5'

A.S. = 197,860 / 103,930 = 1.82

103,930 / 5537 = 19.1'

197,860 / 7400 = 26.7'

27 x 35.80 x 1/2 = 7400k
x = 14,800 / 27 x 35.8 = 15.3k/'

PACIFIC GAS AND ELECTRIC COMPANY

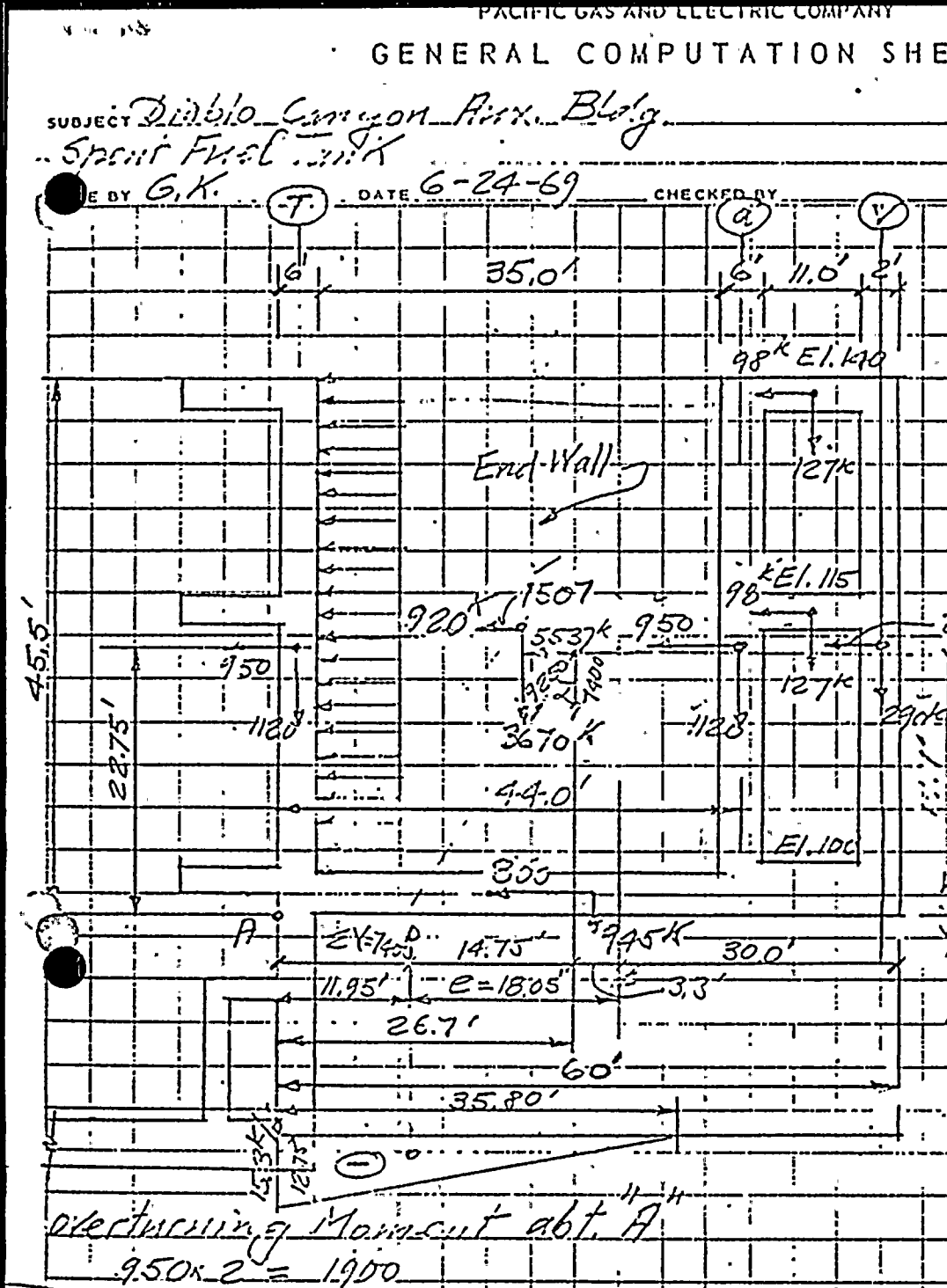
GENERAL COMPUTATION SHEET

JOB FILE NO. ____ LOCATION ____

SUBJECT Diablo Canyon Nux. Bldg. Gr. 1 Page 5 of 13

Spent Fuel Unit

BY G.K. DATE 6-24-69 CHECKED BY APPROVED BY



Seismic Forces

End Wall 1235

Spent Fuel cartridges 272

1507k

Side Walls 950k each

Bottom 840k

Wall on (Y) k

21 x 40 x 0.3 x 0.85 = 214

Floor @ El. 140 & El. 115

11 x 21 x 0.55 x 0.85 = 98.0

Gravity Loads

Water: 21 x 35 x 41 x 0.063 = 1920

Spent fuel cartridges .200 x 1.6 = 320

End Wall: 35 x 46 x 0.90 = 1470

3670k

Side wall: 27 x 46 x 0.9 = 1120k

Wall (Y) 21 x 46 x 0.3 = 290k

Floors: 11 x 21 x 0.5 = 127k

bottom: 42 x 60 x 1.5 / 2 = 945k

For 1/2 Tank only

Tributary to end wall

Overturning Moment abt. A

950 x 2 = 1900			
1507			
3407	x 22.75 =	77500	
920	x 20 =	18400	
800	x 2.5 =	2000	
214	x 22.75 =	4870	
98.0	x 44 =	4300	
92.0	x 14 =	1260	
	ΣH =	537	(M_ot = 108,930)
			945 x 30 = 28,400
			1120 x 3 = 3360
			3670 x 23.5 = 86400
			1120 x 44.0 = 49,300
			290 x 59.0 = 17,100
			254 x 52.5 = 13350
			197,960 = M_r

F.S. = 197,960 / 108,930 = 1.82

108,930 / 537 = 19.7'

Σ V = 7399

197,960 / 7400 = 26.7'

f_x x 27 x 35.80 x 1/2 = 7400k

f_x = 14800 / 27 x 35.8 = 15.3 k/ft

537² = 30,600,000

7400² = 54,700,000

√85,300,000 = 9175

k = 5537 / 9175 = 0.6

n = 7400 / 9175 = 0.8

x = 0.75

0.75 x 14.75 = 11.1'

18.25'