PHILADELPHIA ELECTRIC COMPANY
2301 MARKET STREET
P.O. BOX 8699
PHILADELPHIA, PA. 19101
(215) 841-4502

JOHN S. KEMPER
VICE-PRESIDENT
ENGINEERING AND RESEARCH

Docket Nos. 50-352
50-353

SEP 12 1984

Mr. A. Schwencer, Chief
Licensing Branch No. 2
Division of Licensing
U.S. Nuclear Regulatory Commission
Washington, DC 20555

Subject: Limerick Generating Station, Units 1 & 2
Information for Containment Systems Branch (CSB)
Primary Containment Negative Pressure Design Limit

Reference: 9/7/84 Meeting Between PECo and NRC

File: GOVT 1-1 (NRC)

Dear Mr. Schwencer:

Attached are draft changes to FSAR Section 6.2.1.1.4, Table 6.2-9 and Figures 6.2-19, 20 which are being made as a result of discussions at the referenced meeting.

The information contained on these draft FSAR changes will be incorporated into the FSAR, exactly as it appears on the attachments, in the revision scheduled for September, 1984.

Sincerely,

JW Gallagher
for
JS Kemper

DAA/cmv/09108413

Attachment

Copy to: See Attached Service List

B001
1/1

cc:	Judge Lawrence Brenner	(w/o enclosure)
	Judge Peter A. Morris	(w/o enclosure)
	Judge Richard F. Cole	(w/o enclosure)
	Judge Christine N. Kohl	(w/o enclosure)
	Judge Gary J. Edles	(w/o enclosure)
	Judge Reginald L. Gotchy	(w/o enclosure)
	Troy B. Conner, Jr., Esq.	(w/o enclosure)
	Ann P. Hodgdon, Esq.	(w/o enclosure)
	Mr. Frank R. Romano	(w/o enclosure)
	Mr. Robert L. Anthony	(w/o enclosure)
	Ms. Maureen Mulligan	(w/o enclosure)
	Charles W. Elliot, Esq.	(w/o enclosure)
	Zori G. Ferkin, Esq.	(w/o enclosure)
	Mr. Thomas Gerusky	(w/o enclosure)
	Director, Penna. Emergency Management Agency	(w/o enclosure)
	Angus R. Love, Esq.	(w/o enclosure)
	David Wersan, Esq.	(w/o enclosure)
	Robert J. Sugarman, Esq.	(w/o enclosure)
	Martha W. Bush, Esq.	(w/o enclosure)
	Spence W. Perry, Esq.	(w/o enclosure)
	Jay M. Gutierrez, Esq.	(w/o enclosure)
	Atomic Safety & Licensing Appeal Board	(w/o enclosure)
	Atomic Safety & Licensing Board Panel	(w/o enclosure)
	Docket & Service Section	(w/o enclosure)
	Mr. James Wiggins	(w/o enclosure)
	Mr. Timothy R. S. Campbell	(w/o enclosure)

F5-611

 DRAFT

The inherent conservatisms of this model are: to neglect transfer of sensible heat energy from equipment and structures to the drywell vapor region, to disallow reevaporation of the condensed drywell steam, to maintain a large volume for the drywell region by transferring condensed steam mass directly to the suppression pool, and to require saturated conditions in the primary containment vapor regions. Expanding on this last conservatism, for conditions during which a superheated environment is present initially, it is possible to get a low short-term drop in vapor region pressure. This drop is associated with desuperheating the steam component; the energy for this process comes from the noncondensable component. This reduces the vapor region temperature, and hence pressure, and proceeds until the vapor region is saturated. For relatively hot spray water (e.g., 80°F) this short-term pressure drop can in fact give the maximum negative pressure. However, for cases wherein relatively cold spray water is used (e.g., 50°F) the maximum negative pressure is the long-term pressure. For this situation, a high relative humidity is conservative. This is the case for LGS and hence [illegible] justifies the assumption of saturated conditions for the primary containment vapor regions, both initially and throughout the transient.

DELETE

In addition to the modeling conservatisms, initial conditions for the primary containment are also chosen to induce conservatism in the analysis. The presence of any noncondensables in the drywell tends to hold-up the depressurization rate of this region following spray actuation. Thus, a condition is postulated wherein a small break occurs within the drywell serving to pressurize this region and drive all the noncondensables to the wetwell vapor space. This sets the initial pressure distribution and, along with the assumptions regarding saturated conditions for the steam phase, the temperature distribution for all three regions - drywell, wetwell vapor region, and suppression pool. These initial conditions are presented under the heading "t_o" in Table 6.2-9.

The results of this analysis are illustrated in Figures 6.2-19 and 6.2-20. Again, these results indicate a maximum negative drywell pressure of -4.3 psig.

note: value does not change

6.2.1.1.5 Steam Bypass of the Suppression Pool

6.2.1.1.5.1 Protection Against Bypass Paths

The pressure boundary between drywell and suppression chamber including the downcomers is fabricated, erected, and inspected in accordance with the American Society of Mechanical Engineers (ASME) Boiler and Pressure Vessel Code Section III, Subsection NC, 1971 Edition. This special construction, inspection, and quality control ensures the integrity of this boundary. The design pressure differential and temperature for

FS-611

DRAFT

TABLE 6.2-9

INITIAL AND BOUNDARY CONDITIONS FOR DRYWELL SPRAY ACTUATION ANALYSIS

	t_{-00}(1)	t_0(2)
Drywell		
Volume(3), ft³	242860 ~~248,950~~	~~248,950~~ 242860
Pressure, psia	13.7 ~~14.8~~	~~34.14~~ 35.61
Temperature, °F	135 ~~150~~	~~257.8~~ 260.3
Relative humidity, %	90 ~~100~~	100
Spray rate, gpm/number of trains	0/0	9500/1
Wetwell		
Volume - Vapor region(3), ft³	137132 ~~161,350~~	~~161,350~~ 137132
- Suppression pool(3), ft³	127507 ~~118,655~~	~~118,655~~ 127507
Pressure, psia	13.7 ~~14.8~~	~~29.59~~ 31.28
Temperature, °F	50	50
Relative humidity, %	100	100
Suppression pool free surface area, ft²	4974 ~~5277(5)~~	~~5277(5)~~ 4974
Wetwell-to-Drywell Vacuum Breakers		
Number of valve assemblies	3 of 4	
Flow area per assembly, ft²	2.05	
Flow coefficient(4)	~~0.35~~ .495	
Vacuum breaker ~~lifting~~ full open pressure(4) (psid)	~~5~~ 4.48	
RHR System - Drywell Spray Mode		
Service water flow rate, gpm	9000	
Service water temperature, °F	~~32(4)~~ 40	
Heat exchanger effectiveness	0.249	

(1) Initial conditions prior to small break as discussed in Section 6.2.1.1.4.4

(2) Conditions after small break, preceding drywell spray actuation (see Section 6.2.1.1.4.4).

(3) ~~Low~~ High water level

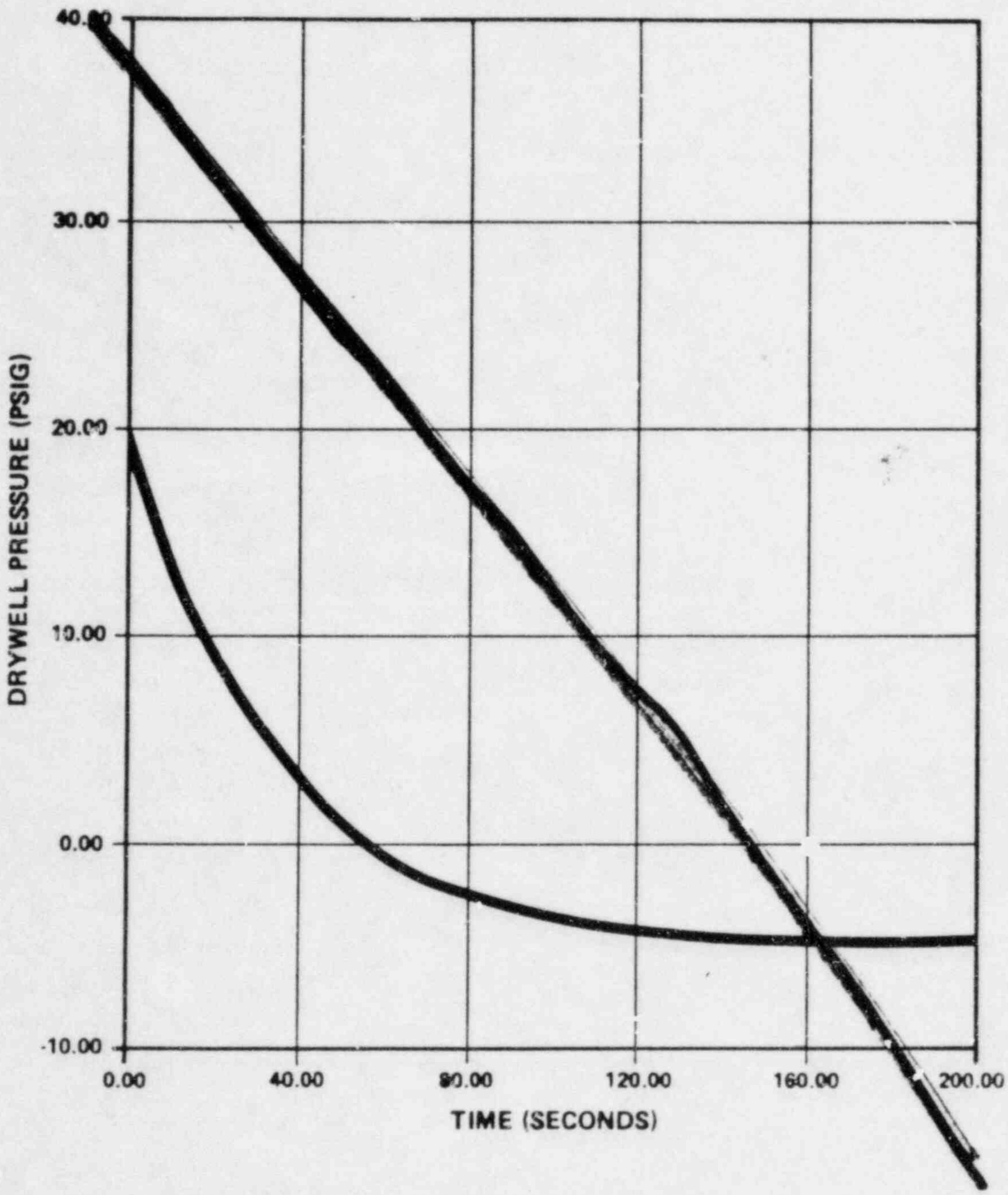
~~(4) Using this value, rather than the value 4854 ft² as listed in Table 6.2-1, has a negligible effect on results~~

~~(5) Using value is more conservative than using the value in Table 6.2-2~~

(4) Value given is for total flow path. Full open pressure differential across the vacuum breaker assembly only is 2.89 psid.

DRAFT

DELETE & REPLACE WITH ATTACHED

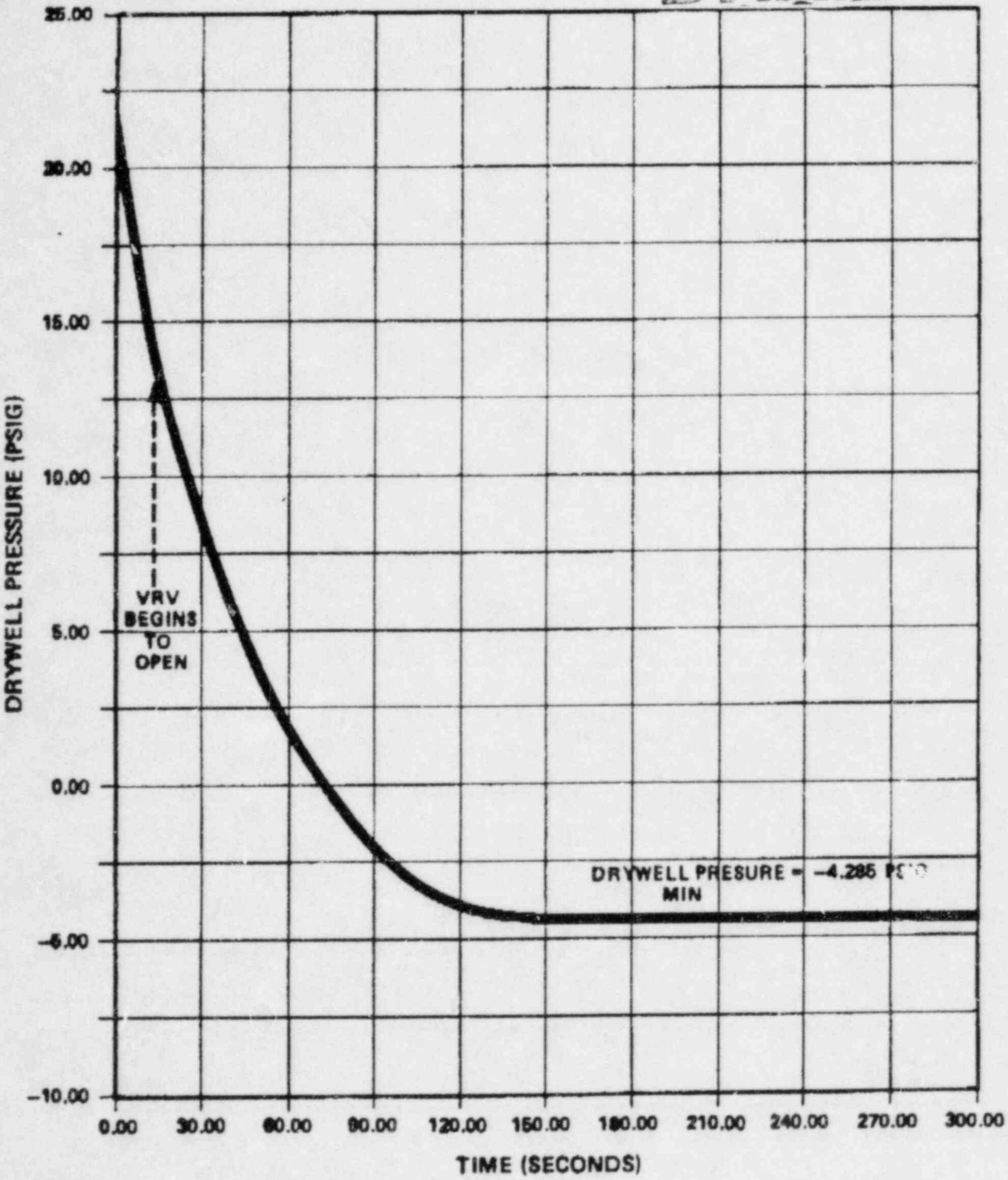


LIMERICK GENERATING STATION
UNITS 1 AND 2
FINAL SAFETY ANALYSIS REPORT

DRYWELL PRESSURE
RESPONSE TO
SPRAY ACTUATION

FIGURE 6.2-19

DRAFT



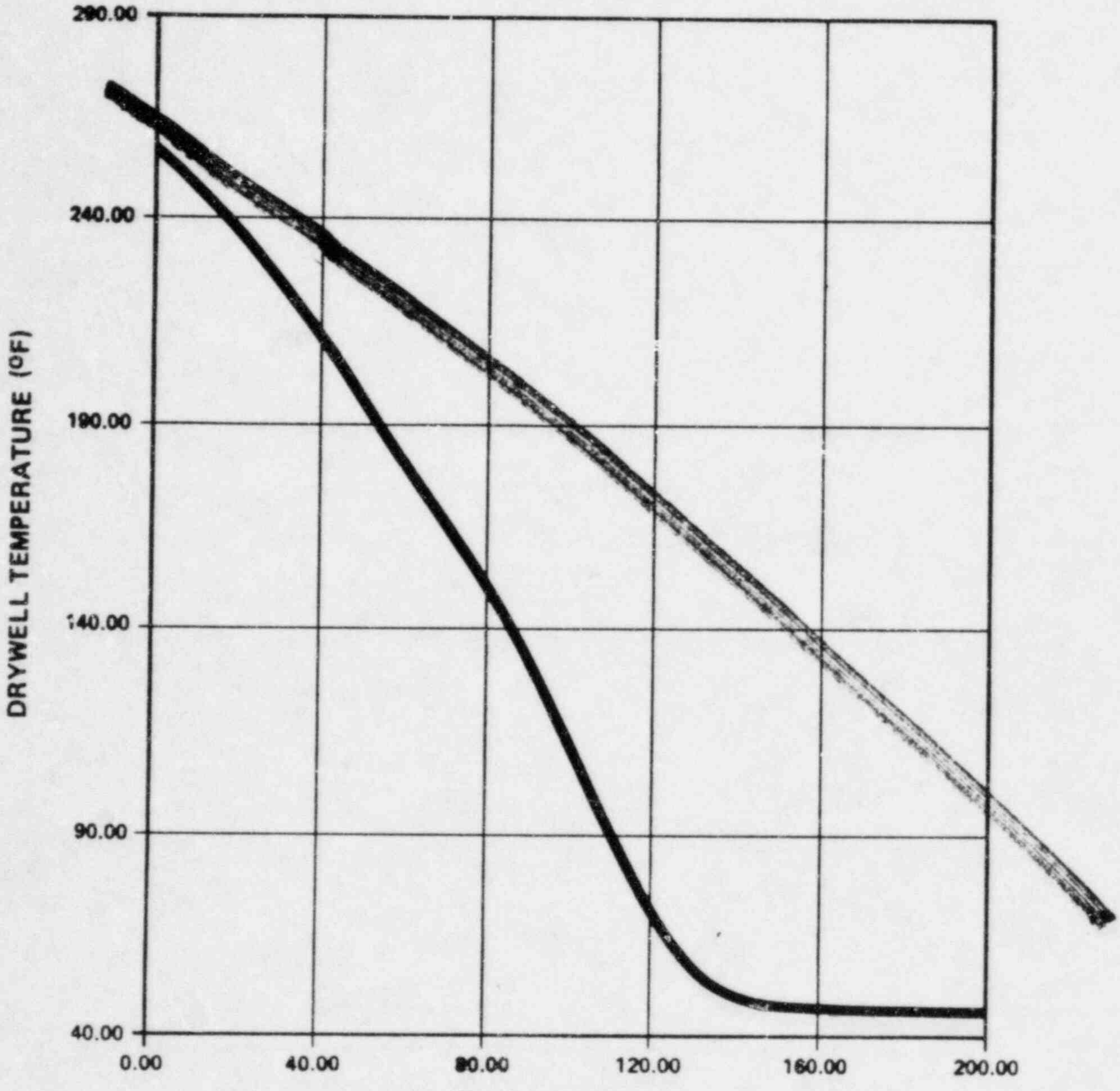
LIMERICK GENERATING STATION
UNITS 1 AND 2
FINAL SAFETY ANALYSIS REPORT

DRYWELL PRESSURE
RESPONSE TO
SPRAY ACTUATION

FIGURE 6.2-19 | REV. 36, 09/84

DRAFT

DELETE & REPLACE WITH ATTACHED

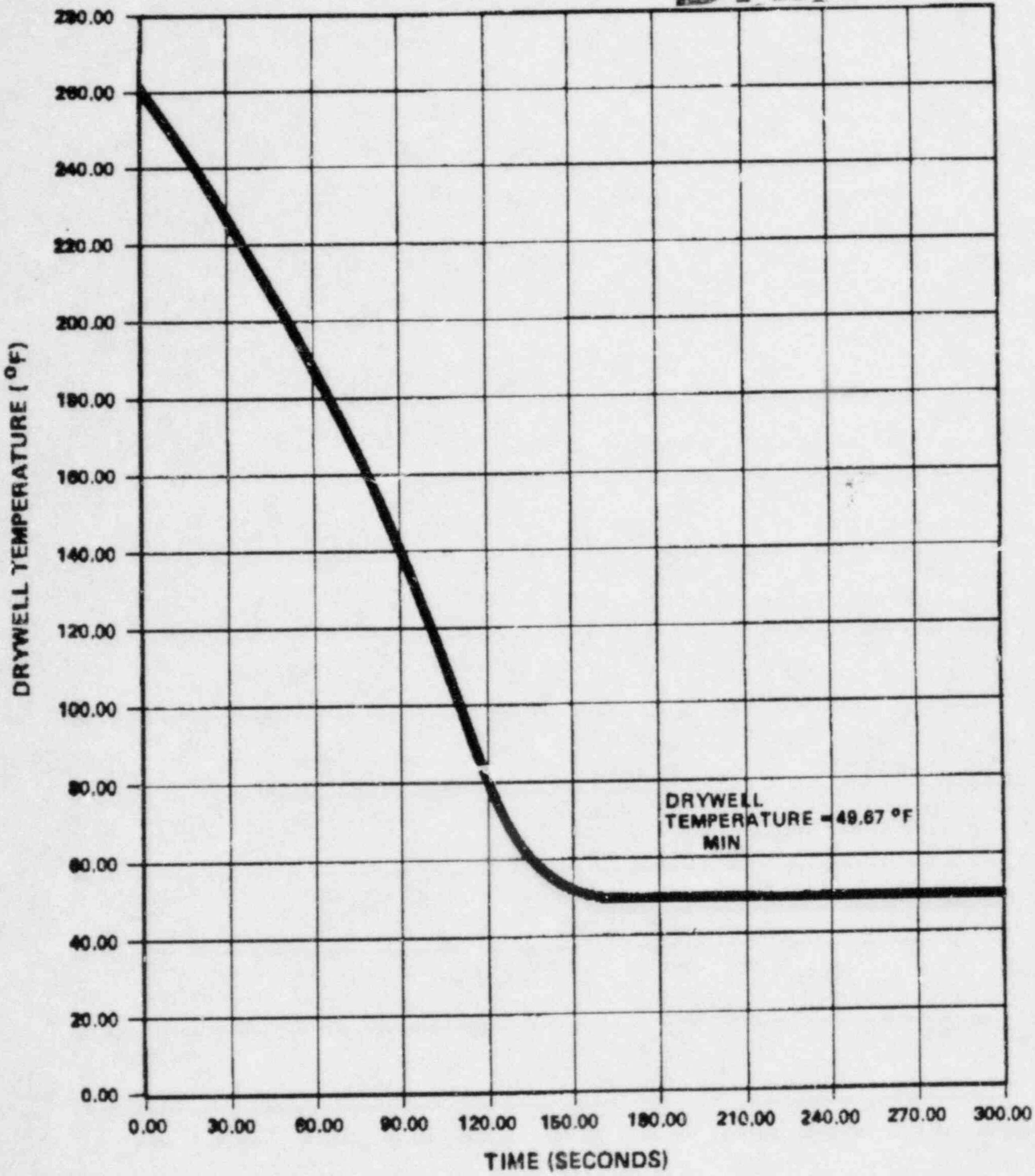


LIMERICK GENERATING STATION
UNITS 1 AND 2
FINAL SAFETY ANALYSIS REPORT

DRYWELL TEMPERATURE RESPONSE TO SPRAY ACTUATION

FIGURE 6.2-20

DRAFT



LIMERICK GENERATING STATION
UNITS 1 AND 2
FINAL SAFETY ANALYSIS REPORT

DRYWELL TEMPERATURE RESPONSE TO SPRAY ACTUATION

FIGURE 6.2-20

REV. 36, 09/84