

ACCELERATED DOCUMENT DISTRIBUTION SYSTEM

REGULATORY INFORMATION DISTRIBUTION SYSTEM (RIDS)

ACCESSION NBR: 9212070231 DOC. DATE: 92/12/04 NOTARIZED: NO DOCKET #
 FACIL: 50-296 Browns Ferry Nuclear Power Station, Unit 3, Tennessee 05000296
 AUTH. NAME AUTHOR AFFILIATION
 AUSTIN, S.W. Tennessee Valley Authority
 ZERINGUE, O.J. Tennessee Valley Authority
 RECIP. NAME RECIPIENT AFFILIATION

SUBJECT: LER 92-004-00: on 921104, chemical release in reactor bldg
 forced evacuation of compensatory action fire watches.
 Caused by unexpected exothermic chemical reaction. Mfg
 (Master Builders, Inc) conducted training. W/921204 ltr.

DISTRIBUTION CODE: IE22T COPIES RECEIVED: LTR 1 ENCL 1 SIZE: 7
 TITLE: 50.73/50.9 Licensee Event Report (LER), Incident Rpt, etc.

NOTES:.

RECIPIENT ID CODE/NAME	COPIES LTTR ENCL	RECIPIENT ID CODE/NAME	COPIES LTTR ENCL
SANDERS, M.	1 1	HEBDON, F	1 1
WILLIAMS, J.	1 1		
INTERNAL: ACNW	2 2	ACRS	2 2
AEOD/DOA	1 1	AEOD/DSP/TPAB	1 1
AEOD/ROAB/DSP	2 2	NRR/DET/EMEB 7E	1 1
NRR/DLPQ/LHFB10	1 1	NRR/DLPQ/LPEB10	1 1
NRR/DOEA/OEAB	1 1	NRR/DREP/PRPB11	2 2
NRR/DST/SELB 8D	1 1	NRR/DST/SICB8H3	1 1
NRR/DST/SPLB8D1	1 1	NRR/DST/SRXB 8E	1 1
REG FILE 02	1 1	RES/DSIR/EIB	1 1
RGN2 FILE 01	1 1		
EXTERNAL: EG&G BRYCE, J.H	2 2	L ST LOBBY WARD	1 1
NRC PDR	1 1	NSIC MURPHY, G.A	1 1
NSIC POORE, W.	1 1	NUDOCS FULL TXT	1 1

NOTE TO ALL "RIDS" RECIPIENTS:

PLEASE HELP US TO REDUCE WASTE! CONTACT THE DOCUMENT CONTROL DESK,
 ROOM P1-37 (EXT. 504-2065) TO ELIMINATE YOUR NAME FROM DISTRIBUTION
 LISTS FOR DOCUMENTS YOU DON'T NEED!

FULL TEXT CONVERSION REQUIRED
 TOTAL NUMBER OF COPIES REQUIRED: LTTR 31 ENCL 31

10-4
dlp



1
2
3
4
5
6
7
8
9
10
11
12
13
14
15
16
17
18
19
20
21
22
23
24
25
26
27
28
29
30
31
32
33
34
35
36
37
38
39
40
41
42
43
44
45
46
47
48
49
50
51
52
53
54
55
56
57
58
59
60
61
62
63
64
65
66
67
68
69
70
71
72
73
74
75
76
77
78
79
80
81
82
83
84
85
86
87
88
89
90
91
92
93
94
95
96
97
98
99
100
101
102
103
104
105
106
107
108
109
110
111
112
113
114
115
116
117
118
119
120
121
122
123
124
125
126
127
128
129
130
131
132
133
134
135
136
137
138
139
140
141
142
143
144
145
146
147
148
149
150
151
152
153
154
155
156
157
158
159
160
161
162
163
164
165
166
167
168
169
170
171
172
173
174
175
176
177
178
179
180
181
182
183
184
185
186
187
188
189
190
191
192
193
194
195
196
197
198
199
200
201
202
203
204
205
206
207
208
209
210
211
212
213
214
215
216
217
218
219
220
221
222
223
224
225
226
227
228
229
230
231
232
233
234
235
236
237
238
239
240
241
242
243
244
245
246
247
248
249
250
251
252
253
254
255
256
257
258
259
260
261
262
263
264
265
266
267
268
269
270
271
272
273
274
275
276
277
278
279
280
281
282
283
284
285
286
287
288
289
290
291
292
293
294
295
296
297
298
299
300
301
302
303
304
305
306
307
308
309
310
311
312
313
314
315
316
317
318
319
320
321
322
323
324
325
326
327
328
329
330
331
332
333
334
335
336
337
338
339
340
341
342
343
344
345
346
347
348
349
350
351
352
353
354
355
356
357
358
359
360
361
362
363
364
365
366
367
368
369
370
371
372
373
374
375
376
377
378
379
380
381
382
383
384
385
386
387
388
389
390
391
392
393
394
395
396
397
398
399
400
401
402
403
404
405
406
407
408
409
410
411
412
413
414
415
416
417
418
419
420
421
422
423
424
425
426
427
428
429
430
431
432
433
434
435
436
437
438
439
440
441
442
443
444
445
446
447
448
449
450
451
452
453
454
455
456
457
458
459
460
461
462
463
464
465
466
467
468
469
470
471
472
473
474
475
476
477
478
479
480
481
482
483
484
485
486
487
488
489
490
491
492
493
494
495
496
497
498
499
500
501
502
503
504
505
506
507
508
509
510
511
512
513
514
515
516
517
518
519
520
521
522
523
524
525
526
527
528
529
530
531
532
533
534
535
536
537
538
539
540
541
542
543
544
545
546
547
548
549
550
551
552
553
554
555
556
557
558
559
560
561
562
563
564
565
566
567
568
569
570
571
572
573
574
575
576
577
578
579
580
581
582
583
584
585
586
587
588
589
590
591
592
593
594
595
596
597
598
599
600
601
602
603
604
605
606
607
608
609
610
611
612
613
614
615
616
617
618
619
620
621
622
623
624
625
626
627
628
629
630
631
632
633
634
635
636
637
638
639
640
641
642
643
644
645
646
647
648
649
650
651
652
653
654
655
656
657
658
659
660
661
662
663
664
665
666
667
668
669
670
671
672
673
674
675
676
677
678
679
680
681
682
683
684
685
686
687
688
689
690
691
692
693
694
695
696
697
698
699
700
701
702
703
704
705
706
707
708
709
710
711
712
713
714
715
716
717
718
719
720
721
722
723
724
725
726
727
728
729
730
731
732
733
734
735
736
737
738
739
740
741
742
743
744
745
746
747
748
749
750
751
752
753
754
755
756
757
758
759
760
761
762
763
764
765
766
767
768
769
770
771
772
773
774
775
776
777
778
779
780
781
782
783
784
785
786
787
788
789
790
791
792
793
794
795
796
797
798
799
800
801
802
803
804
805
806
807
808
809
810
811
812
813
814
815
816
817
818
819
820
821
822
823
824
825
826
827
828
829
830
831
832
833
834
835
836
837
838
839
840
841
842
843
844
845
846
847
848
849
850
851
852
853
854
855
856
857
858
859
860
861
862
863
864
865
866
867
868
869
870
871
872
873
874
875
876
877
878
879
880
881
882
883
884
885
886
887
888
889
890
891
892
893
894
895
896
897
898
899
900
901
902
903
904
905
906
907
908
909
910
911
912
913
914
915
916
917
918
919
920
921
922
923
924
925
926
927
928
929
930
931
932
933
934
935
936
937
938
939
940
941
942
943
944
945
946
947
948
949
950
951
952
953
954
955
956
957
958
959
960
961
962
963
964
965
966
967
968
969
970
971
972
973
974
975
976
977
978
979
980
981
982
983
984
985
986
987
988
989
990
991
992
993
994
995
996
997
998
999
1000



Tennessee Valley Authority, Post Office Box 2000, Decatur, Alabama 35609-2000

O. J. "Ike" Zeringue
Vice President, Browns Ferry Nuclear Plant

DEC 04 1992

U.S. Nuclear Regulatory Commission
ATTN: Document Control Desk
Washington, D.C. 20555

Dear Sir:

TVA - BROWNS FERRY NUCLEAR PLANT (BFN) UNITS 1, 2, 3 - DOCKET NOS. 50-259, 260, AND 296 - FACILITY OPERATING LICENSE DPR-33, 52, 68 - LICENSEE EVENT REPORT LER 50-296/92004

The enclosed report provides details concerning a chemical release in the Unit 3 Reactor Building that forced an evacuation of compensatory action fire watches leading to a violation of fire watch technical specifications.

This report is submitted in accordance with 10 CFR 50.73(a)(2)(i)(B).

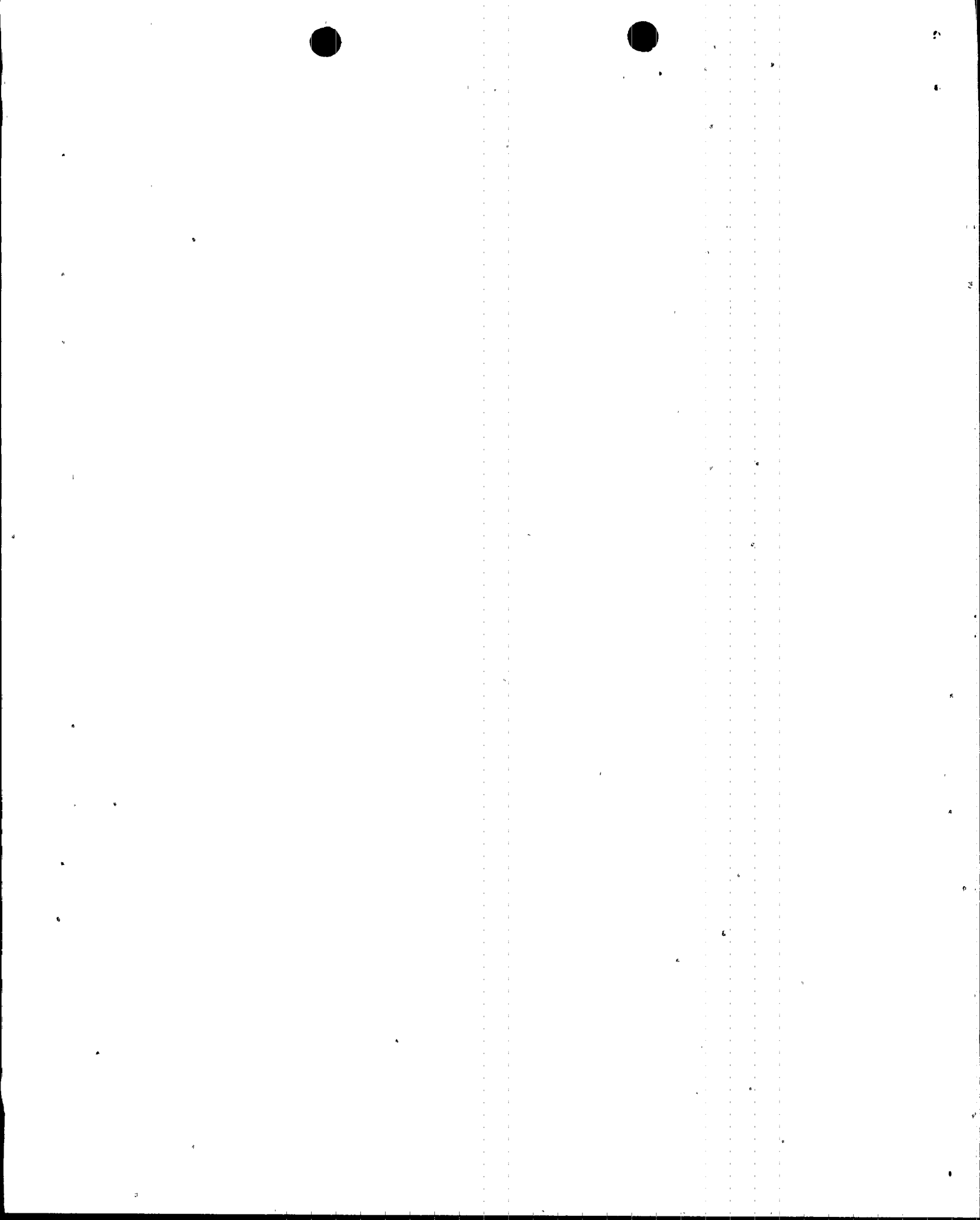
Sincerely,


O. J. Zeringue

Enclosure
cc: See page 2

9212070231 921204
PDR ADOCK 05000296
S PDR

JE22



U.S. Nuclear Regulatory Commission

DEC 04 1992

cc (Enclosure):

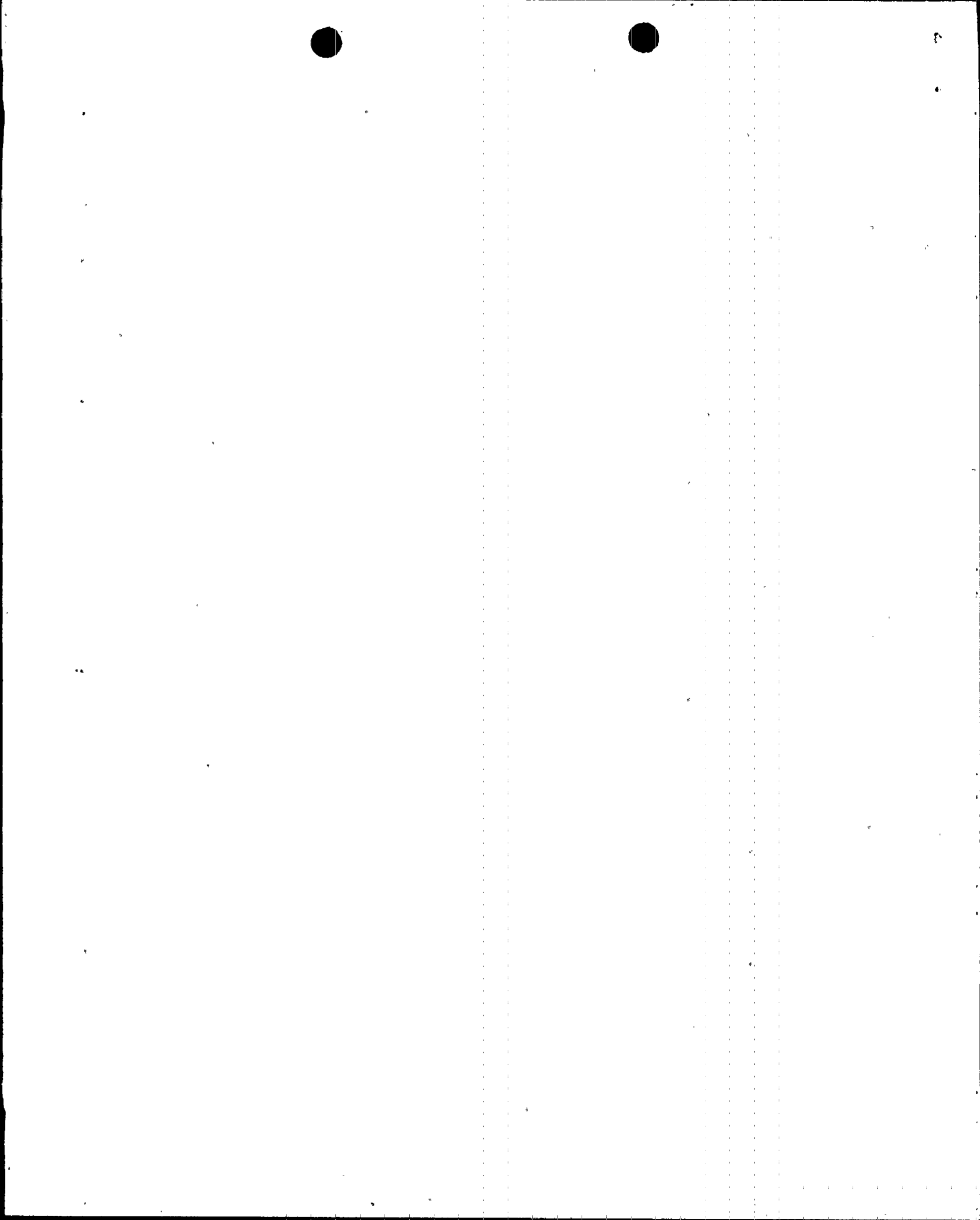
INPO Records Center
Suite 1500
1100 Circle 75 Parkway
Atlanta, Georgia 30339

Paul Krippner
American Nuclear Insurers
Town Center, Suite 300S
29 South Main Street
West Hartford, Connecticut 06107

NRC Resident Inspector
Browns Ferry Nuclear Plant
Route 12, P.O. Box 637
Athens, Alabama 35609-2000

Regional Administrator
U.S. Nuclear Regulatory Commission
Region II
101 Marietta Street, Suite 2900
Atlanta, Georgia 30323

Thierry M. Ross
U.S. Nuclear Regulatory Commission
One White Flint, North
11555 Rockville Pike
Rockville, Maryland 20852



LICENSEE EVENT REPORT (LER)

FACILITY NAME (1) Browns Ferry Nuclear Plant (BFN) Unit 3										DOCKET NUMBER (2) 050002		PAGE (3) 9610F05							
TITLE (4) Chemical Release in Unit 3 Reactor Building Forced an Evacuation of Compensatory Action Fire Watches Leading to a Violation of Technical Specifications.																			
EVENT DAY (5)				LER NUMBER (6)				REPORT DATE (7)				OTHER FACILITIES INVOLVED (8)							
MONTH		DAY		YEAR		SEQUENTIAL NUMBER		REVISION NUMBER		MONTH		DAY		YEAR		FACILITY NAMES		DOCKET NUMBER(S)	
11		04		92		004		00		12		04		92		Unit 2		050002610	
OPERATING MODE (9)		THIS REPORT IS SUBMITTED PURSUANT TO THE REQUIREMENTS OF 10 CFR §: (Check one or more of the following)(11)																	
N		20.402(b)				20.405(c)				50.73(a)(2)(iv)				73.71(b)					
POWER LEVEL (10)		20.405(a)(1)(i)				50.36(c)(1)				50.73(a)(2)(v)				73.71(c)					
00		20.405(a)(1)(ii)				50.36(c)(2)				50.73(a)(2)(vii)				OTHER (Specify in Abstract below and in Text, NRC Form 366A)					
00		20.405(a)(1)(iii)				X 50.73(a)(2)(i)(B)				50.73(a)(2)(viii)(A)									
		20.405(a)(1)(iv)				50.73(a)(2)(ii)				50.73(a)(2)(viii)(B)									
		20.405(a)(1)(v)				50.73(a)(2)(iii)				50.73(a)(2)(x)									
LICENSEE CONTACT FOR THIS LER (12)																			
NAME										TELEPHONE NUMBER									
S. W. Austin, Compliance Licensing Engineer										205729-2070									
COMPLETE ONE LINE FOR EACH COMPONENT FAILURE DESCRIBED IN THIS REPORT (13)																			
CAUSE		SYSTEM		COMPONENT		MANUFACTURER		REPORTABLE TO NPRDS		CAUSE		SYSTEM		COMPONENT		MANUFACTURER		REPORTABLE TO NPRDS	
SUPPLEMENTAL REPORT EXPECTED (14)										EXPECTED SUBMISSION DATE (15)		MONTH		DAY		YEAR			
YES (If yes, complete EXPECTED SUBMISSION DATE)										X		NO							
ABSTRACT (Limit to 1400 spaces, i.e., approximately fifteen single-space typewritten lines) (16)																			

On November 4, 1992, at 1900 hours, all compensatory action fire watches were temporarily evacuated from the Unit 3 Reactor Building due to a chemical release. This resulted in a violation of technical specifications. The chemical release was due to an unexpected exothermic chemical reaction that occurred during the use of an epoxy grout compound, Ceilcote 658N Grout, manufactured by Master Builders, Incorporated.

The root cause of this event was lack of appropriate warning information and proper instructions for safe use of the epoxy grout compound. The information provided by the manufacturer did not caution the user that leaving the epoxy grout compound in a confining container would cause the compound to heat up producing smoke and vapors.

Corrective action to prevent recurrence included hands on training by the manufacturer. A precaution will be added to the procedure governing the use of such epoxy compounds.

LICENSEE EVENT REPORT (LER)
TEXT CONTINUATION

FACILITY NAME (1)	DOCKET NUMBER (2)	LER NUMBER (6)			PAGE (3)		
		YEAR	SEQUENTIAL NUMBER	REVISION NUMBER			
Browns Ferry Unit 3	0500219692	0	04	0	0	12	015

TEXT (If more space is required, use additional NRC Form 366A's) (17)

I. PLANT CONDITIONS

Unit 2 was at 2866 megawatts thermal or 87 percent power. Units 1 and 3 are defueled.

II. DESCRIPTION OF EVENT

A. Event:

On November 4, 1992, at 1900 hours, all compensatory action fire watches were evacuated from the Unit 3 Reactor Building (U3 Rx Bld) [NG] due to a chemical release. The release was caused by an unexpected exothermic reaction that occurred during the use of an epoxy grout compound, Ceilcote 658N Grout, manufactured by Master Builders, Incorporated.

On November 4, 1992, at approximately 1822 hours, contract craft personnel mixed an epoxy grout compound and readied it for injection under the Unit 3 Reactor Water Cleanup System Pump B [CE] baseplate. Approximately one fourth of the grout compound, or 7.5 pounds, was used to grout the pump baseplate and the leftover compound, approximately 21.5 pounds, remained in the mixing container. At approximately 1850 hours, the craft foreman noted the remainder of the epoxy compound in the container was smoking profusely. At that time, he initiated a report to the Shift Operations Supervisor (SOS) on the plant Fire/Medical Emergency Alarm telephone number. At 1852 hours, Operations Fire Protection and the SOS received a call informing them of the smoke in the U3 Rx Bld elevation 593. Subsequently, they further identified that the smoke had propagated to all elevations of the U3 Rx Bld and Refuel Floor [ND].

At 1900 hours, all personnel were ordered evacuated from U3 Rx Bld by the SOS including all compensatory action fire watches for personnel safety. At 1932 hours, the "A" Standby Gas Treatment (SGT) System [BH] was placed in service to remove smoke and fumes from the building and at 1948 hours the smoking container of epoxy was removed from the building. Operations Fire Protection remained on the scene until 2100 hours ensuring all personnel had safely evacuated the building. At 2130 hours the U3 Rx Bld and Refuel Floor were declared safe for return to work and at that time the continuous fire watches returned to their stations. On November 5, 1992, at 0001 hours, the roving fire watch was reestablished.

TVA reports this event in accordance with 10 CFR 50.73(a)(2)(i)(B), as an operation or condition prohibited by the plant's technical specifications.



LICENSEE EVENT REPORT (LER)
TEXT CONTINUATION

FACILITY NAME (1)	DOCKET NUMBER (2)	LER NUMBER (6)						PAGE (3)			
Browns Ferry Unit 3			SEQUENTIAL			REVISION					
		YEAR	NUMBER			NUMBER					
	0 5 0 0 0 2 9 6	9 2 — 0 0 4 — 0 0 0 3 OF 0 5									

TEXT (If more space is required, use additional NRC Form 366A's) (17)

B. Inoperable Structures, Components, or Systems that Contributed to the Event:

The Unit 3 Reactor Building normal ventilation was inoperable during this event. If the system had been operable, the smoke from the epoxy compound may have been limited to the general area of the work being performed.

C. Dates and Approximate Times of Major Occurrences:

November 4 at 1900 CST	Smoke and fumes from an exothermic reaction in an epoxy grout mix in U3 Rx Bld force evacuation of all personnel including compensatory action fire watches.
November 4 at 2130 CST	Unit 3 Reactor Building is declared safe for return to work and continuous compensatory action fire watches are reestablished.
November 5 at 0001 CST	Roving fire watch makes his first rounds.

D. Other Systems or Secondary Functions Affected:

None.

E. Method of Discovery:

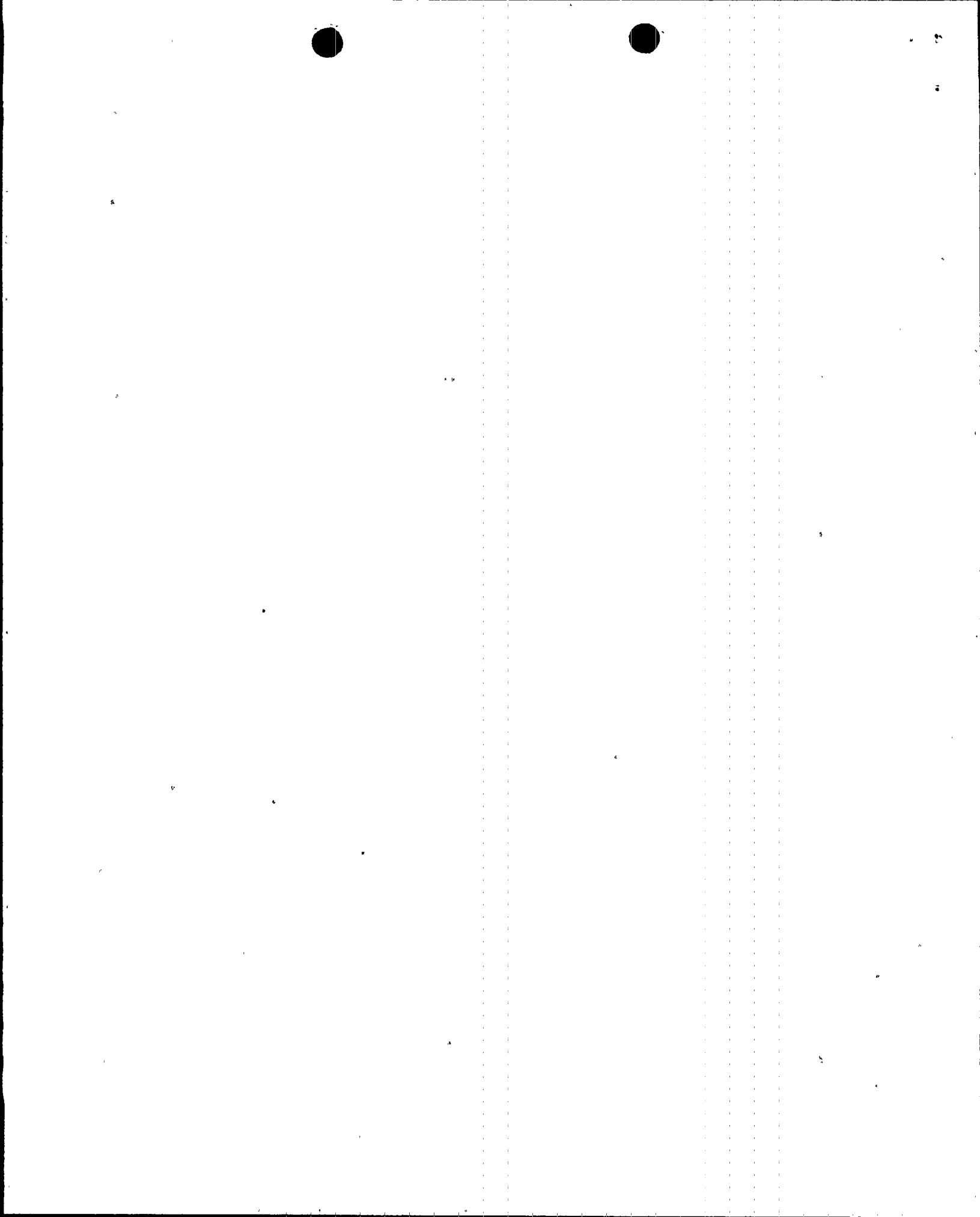
The SOS was informed of the emergency via Emergency/Medical Alarm telephone.

F. Operator Actions:

None.

G. Safety System Responses:

None.



LICENSEE EVENT REPORT (LER)
TEXT CONTINUATION

FACILITY NAME (1)	DOCKET NUMBER (2)	LER NUMBER (6)			PAGE (3)		
		YEAR	SEQUENTIAL NUMBER	REVISION NUMBER			
Browns Ferry Unit 3	050002196	92	004	00	04	05	

TEXT (If more space is required, use additional NRC Form 366A's) (17)

III. CAUSE OF THE EVENT

A. Immediate Cause:

The immediate cause of this event was allowing the unused grout mixture to remain in a confining container without sufficient provision to dissipate the heat generated by the exothermic hardening reaction.

B. Root Cause:

The root cause of this event was lack of appropriate warning information and proper instructions for safe use of the epoxy grout compound. The information provided by the manufacturer did not caution the user that leaving the epoxy grout compound in a confining container would cause the compound to attain a high temperature producing smoke and vapors.

C. Contributing Factors:

The manufacturer's specified mix ratio was 100 parts resin to 14 parts hardener and emphasized accurate mixing of the parts. The epoxy is supplied as a 30 pound kit with premeasured parts. Making a smaller batch was not recommended by the manufacturer. Craft performing the work expected that the unused portion of the grout would solidify and be discarded. Therefore, they mixed an entire kit (26 pounds 5 ounces Part A and 3 pounds 11 ounces of Part B) in one batch.

IV. ANALYSIS OF THE EVENT

There were no safety system responses during the event. The exothermic chemical reaction that occurred during the event generated excessive smoke and vapors filling all elevations of the U3 Rx Bld and necessitated evacuation of personnel for safety. Because of the ongoing Unit 3 restart construction activities, such as installation of scaffolding blocking fire protection system spray patterns, the Unit 3 sprinkler systems had been declared inoperable. In addition, because of NRC Bulletin 92-01, Thermo-Lag fire barrier material utilized for protection and separation of conduits necessary to support Unit 2 operation had been declared inoperable. For these reasons, various fire watches were in place in Unit 3.

Although the fire protection systems had been declared inoperable as a result of the conditions described above, they were available during this event. Therefore, this event had minimal impact on plant safety.

During the event, the "A" SGT was placed in service for removal of smoke and vapor. Due to potential contamination of the charcoal filter beds, TVA conservatively declared "A" SGT inoperable and the charcoal beds replaced. Subsequent charcoal analysis has proven that "A" SGT was not compromised.



LICENSEE EVENT REPORT (LER)
TEXT CONTINUATION

FACILITY NAME (1)	DOCKET NUMBER (2)	LER NUMBER (6)				PAGE (3)			
Browns Ferry Unit 3			SEQUENTIAL		REVISION				
		YEAR	NUMBER		NUMBER				
	0501012916	92	004	000	05	OF	05		

TEXT (If more space is required, use additional NRC Form 366A's) (17)

V. CORRECTIVE ACTIONS

A. Immediate Corrective Actions:

All personnel were evacuated from Unit 3 reactor building. The container of epoxy grout was removed from the Unit 3 Reactor Building. The smoke and vapors were removed by placing a SGT train in service. The remaining epoxy grout compound was accounted for and placed on administrative hold pending evaluation of the incident.

B. Corrective Actions to Prevent Recurrence:

1. Personnel involved in the use of Ceilcote 658N Grout were provided hands-on training by the manufacturer.
2. A precaution regarding the handling of epoxy grout compounds will be added to the appropriate instruction.

VI. ADDITIONAL INFORMATION

A. Failed Components:

None.

B. Previous LERs on Similar Events:

None.

VII. COMMITMENTS

A precaution regarding the handling of epoxy grout compounds will be added to the appropriate plant instruction. This will be completed by January 18, 1993.

Energy Industry Identification System (EIIS) codes are identified in the text as [XX].

