X

-

DISTRIBUTION: Central Files PSS Rdg. File

April 13, 1979

MEMORANDUM FOR: V. Stello, Jr., Director, TMI Operations

FROM:

F. J. Miraglia, Jr., Coordinator, Team B

SUBJECT:

ADVISORY ON EFFECT OF LOSS OF RECOMBINER OPERATION ON HYDROGEN CONCENTRATION IN

CONTAINMENT

The attached subject advisory is provided for your information, and was prepared by Jack Kudrick.

151

F. J. Miraglia, Jr. Coordinator Team B

Attachment: As Stated

cc: see attached distribution list

7904270152

orrigs >-	Tear	A			
SURMANS >	FJM1	mia:dr			
OFFIGE → BURHAME → DATE →	04/3	/79	 		

NEC FORM 318 (9-76) NECM 0248

\* u.s. severnment eninting errices 1074 - 101 - 701 81 026

## Hydrogen Concentrations Within the Containment

At 0115 on April 13, 1979, the AI recombiner heater assembly failed.

As a result, there is no recombiner currently in operation at the site.

We have performed a number of COGAP runs to determine the hydrogen increase in the containment due to radiolysis to determine if recombiners are still required. As a result of these analyses, we find that the hydrogen production rate due to radiolysis, is very small. The calculated hydrogen production rate will yield only an increase of about 0.12% in hydrogen concentration within the containment over the next five days. Therefore, it will take over 40 days for the concentration to increase by one volume percent due to radiolysis. Based on these calculations, we therefore conclude that radiolysis is sufficiently low to preclude any near term requirements for recombiner operation.

We have also investigated the potential hydrogen source term due to metal corrosion as well as coating decomposition. Based on all the available data, there is no indication that any measureable amount of hydrogen will be generated within the containment. This is due to the low temperatures (i.e., less than 100°F).

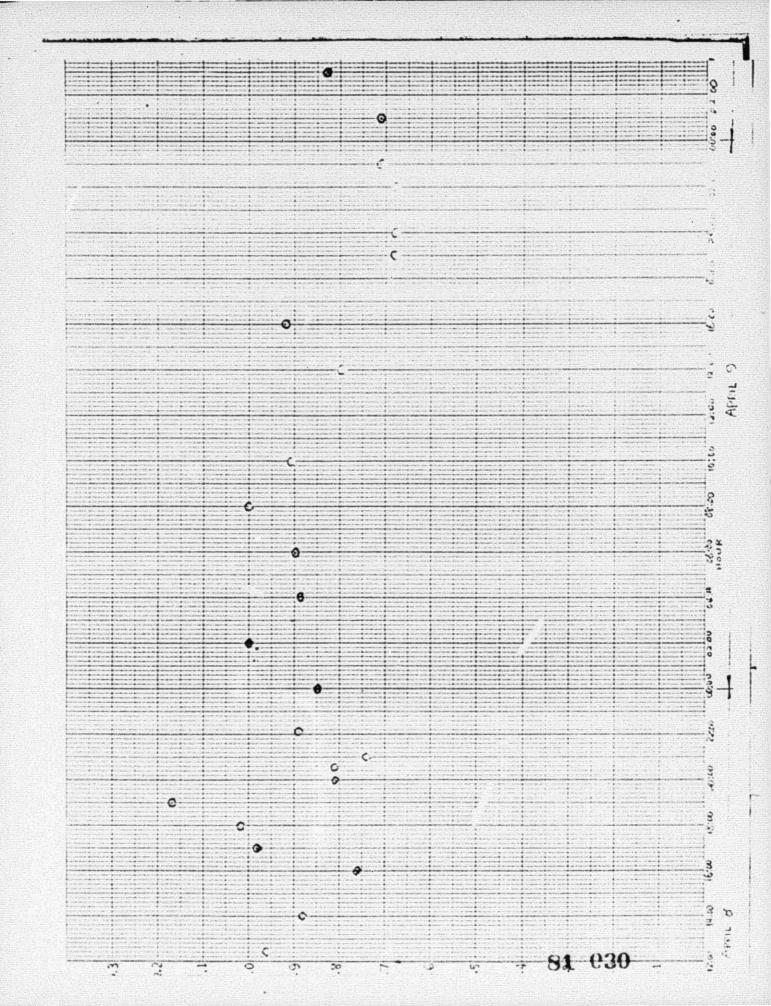
There is, however, a concern relative to the significant variations in measured hydrogen concentration in the containment to date. Based on information available, in the form of daily data summary charts, (see enclosed figure) we note a rather wide cyclic variation in hydrogen concentrations. These variations cannot be accounted for due to radiolysis or metal corrosion or recombiner operation.

Based on an average H<sub>2</sub> concentration of 2.0% it would take approximately 30 hours of recombiner operation to reduce the concentration to 1.9%. There are several possibilities as to why these variations are occurring. One possibility is due to instrument error. Other possible reasons are due to short-term local gradients caused by introduction of significant quantities of hydrogen from either the gas decay tanks or from venting of the primary system. A final possibility could be the presence of significant hydrogen stratification within the containment. This latter possibility is felt to be remote since three fan coolers have been in operation for several days. The forced circulation caused by the running of these fans should be more than sufficient to homogenize the containment atmosphere. This is further strengthened by the fact that the containment temperatures are rather uniform.

To properly assess the potential of short-term gradients in the containment due to introduction of hydrogen from either the das decembers or the primary system, we will need the following information.

- The specific times and duration of the gas decay tank venting into containment.
- 2. The estimated hydrogen source strength associated with each venting, if available (i.e., cubic ft of hydrogen introduced into containment).
- 3. The time and duration of pressurizer venting to the containment.
- 4. Estimates of hydrogen release, if available.
- 5. Location of sample points.

It should be stressed that at the present time it is our belief that the hydrogen variations as measured cannot be accounted for due to any assumed generation rates due to radiolysis or metal corrosion. Therefore, it may be measurement error or local transient gradients due to hydrogen addition. To fully explain the possibility of significant hydrogen concentration variations within the containment, we will need the above information to properly assess the effects of short-term hydrogen releases into the containment.



	<del></del>		
			A CONTRACTOR OF THE CONTRACTOR
		The state of the s	
		0	
	TOTAL CHARGE AND A RESIDENCE OF THE PARTY OF		
The state of the s			Backer B. B. Lagran B. G. (1907) G. J. B. G. G. G. B. J. (1907) G. G. B. G. B. G.
**			
THE THE STATE OF THE PARTY OF T	CONTRACTOR SECURIOR S	r and Allery in Control (American Architecture) in the member of the control and American in the control of the co	energy services and the services of the servic
The second secon			TO THE STATE OF TH
	9		CONTRACTOR OF CO
			American property and the second seco
			SOLU & Carrent of the Control of the
			• •
	management in any province and executive contract and a province con-		
			The state of the s
			CONTRACTOR OF THE STATE OF THE
		The second of th	TOTAL CONTRACTOR OF THE STATE O
			The State of the S
		The state of the s	
			8
	4		(w)
			Marie C. Commission Description of the Commission of the Commissio
	and investment of the state of		
The second secon		and the contract of the contra	
		A Control of Control o	
		The control of the co	Control of the Artist of Control of the Control of
ergi di constituta i constituta di mante di di constituta	THE CONTRACTOR OF SOME RECOGNIZING WHICH REPORTS	the state of the s	
		0	
100 A	18 (17) (17) (17) (17) (17) (17) (17) (17)		
			81 031
THE COURSE STATE OF THE PARTY O	AND A STATE OF THE PROPERTY OF		- OF CG1

			: ৩	TERRICE.	<del></del>
			1		
			* * * * * * * * * * * * * * * * * * *		
		10			
		1			
					A-10-A-10-A-10-A-10-A-10-A-10-A-10-A-10
	**************************************				
- I		**************	*******		
		**************************************			
The second second	200 x 20 cp 2 4 pm 1 4 pm 10 4 pm 10 m 1		*******		
	1 8 1 1 1 1 2 2 2 2 2 2 2 2 2 2 2 2 2 2				
	THE RESERVE OF THE PARTY OF THE	Hardware and San			
Calcange that Assess have the sense			) FO TOP ( F )           F F F F F F F F F F F F F		
		A STATE OF THE PARTY OF THE PAR		A STATE OF S	
		**			
					The transfer of the same
A A SPACE OF THE SPACE OF					
				***************************************	
		15 - 160 W. W. SARREDON & S. C.	and the second s	CANADA TOTAL	······································
			**************************************	**************************************	
	/ The same Arms and the same services			***********	A \$1000 1 5 75 75 75 75 75 75 75 75 75 75 75 75 7
THE RESERVE OF THE PARTY OF THE				1	A CONTRACTOR OF THE PROPERTY OF THE PARTY OF
			** * * * * * * * * * * * * * * * * * *	1	
		1			
	H		A THE RESERVE AND THE PARTY OF		I CONTRACTOR OF THE PARTY OF TH
				*******	
Continues and the species of contract the second section of the section of			to \$ makes to \$ looks short \$ technology \$000 \$ con-		
	<b>O</b>				
			-4	4	
	NAME AND ADDRESS OF THE OWNER, WHEN PARTY AND ADDRESS OF THE PARTY AND				
	and the processing in the last of the contract of the contract of				
		100000000000000000000000000000000000000			
		*			
					**************************************
4 - 1   4 - 1   4   - 1			4: 2 2		
		**************************************		End to E	
		1			
			*		
		***************************************			
			#		
		* *	1		
			A COLOR OF THE CALL OF THE CALL		
			A COLUMN TO THE RESIDENCE OF THE PARTY OF		
		•		# 1 1 1 1 1 1 1 1 1 1 1 1 1 1 1 1 1 1 1	* * * * * * * * * * * * * * * * * * *
				A	
	The state of the s	177			21 .000
		*			81 032
		RELATION AND A SECOND			

46 1320

The second second second .

C