

Factor



UNITED STATES  
NUCLEAR REGULATORY COMMISSION  
REGION III  
799 ROOSEVELT ROAD  
GLEN ELLYN, ILLINOIS 60137

November 30, 1981

MEMORANDUM FOR: J. A. Hind, Director, Division of Emergency Preparedness  
and Operational Support

FROM: William B. Menczer, Regional State Liaison Officer

SUBJECT: TRIP REPORT - ROSEMONT, ILLINOIS AND COLUMBUS, OHIO

On November 24, 1981, I was in Rosemont, Illinois meeting with Governors' representatives of nine states comprising the Midwest Compact Committee (MCC). States represented were Illinois, Iowa, Missouri, Minnesota, Ohio, Wisconsin, Michigan, Kansas and Kentucky. Delaware, Virginia and Maryland were represented as observers only. The Dakotas and Nebraska were not represented. Indiana did not send a representative since the legislature is not in session and therefore, is unable to concur with any appointee of the Governor. A complete list of attendees is attached.

The MCC agreed conceptually as to how their interstate compact would function and operate. The majority favored the creation of a strong commission with powers to designate host states for various waste disposal/treatment facilities. Additionally, the MCC discussed and modified each of the nine proposed compact articles to reflect the majority view.

The MCC agreed to submit their draft compact, as modified, to Raymond Brown of the Southern States Energy Board for development of final language. The final draft will be provided to each MCC member prior to December 17, 1981, at which time final comments will be incorporated into the document. After that meeting, it is expected that each state will provide it to its legislature for review.

I met separately with Ron Kucera, Deputy Director of the Missouri Department of Natural Resources and Lisle Cook, Iowa State Representative, regarding a potential low level radioactive disposal site in Kansas. Kansas, an Agreement State, received an application about three years ago for licensing of a site from the Rickano Corporation. The proposed site was an abandoned deep salt mine located in Lyons. Kansas recently passed legislation prohibiting the Health Department from acting on the application until the state joins an interstate compact for low level waste disposal. Mr. Kucera was concerned about this issue since licensing of the site would

facilitate the establishment of a compact by member states of the MCC. I agreed, at his request, to provide answers to the following questions which were cited by Kansas as the reasons for their opposition to the Lyons proposal.

1. Is a deep salt mine such as that located in Lyons feasible for low level waste disposal?
2. Is the potential for worker exposure significant for this type of repository or is radon gas the true source of exposure problems?
3. Is the estimated disposal cost of \$10 per cubic foot at Lyons realistic?

The MCC's next meeting will be on December 17, 1981 at the O'Hare Hilton in Rosemont, IL.

On November 25, 1981, James E. Foster and I were in Columbus, Ohio meeting with Kenneth Meckstroth, Office of the Governor; Robert Quillin, State Radiological Health Program Director; Harold Kohn, Ohio EPA; James Williams, State Liaison Officer to the NRC; Milo Belden, Ohio DOE Chief of Technology; and State Senator Cooper Snyder of the Fourteenth District (covering the Zimmer/Moscow area) to present and discuss the Zimmer investigation report and NRC enforcement activities.

I provided a briefing which covered the reasons for the investigation at Zimmer, specific findings, NRC enforcement action taken, requirements NRC placed on Cincinnati Gas and Electric (CG&E) and their commitments made, and the impact on the State of Ohio and their role in the Zimmer issue. A copy of the report was provided to each official present at the meeting.

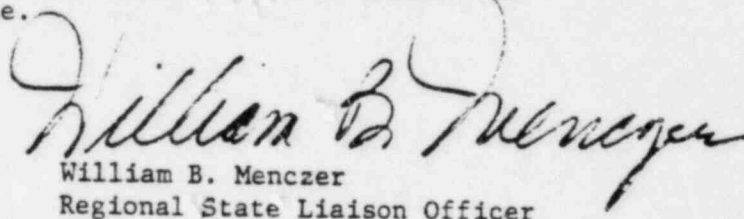
The meeting was highly productive and the state officials gained an understanding and appreciation of the problems and their significance at Zimmer. Following my presentation, Mr. Foster and I responded to their questions which primarily concerned why the NRC did not uncover these deficiencies and violations sooner, the role of the State of Ohio in this matter, our prognosis for licensing and resolution of the problems, the lack of adequate communication between CG&E and the State of Ohio, and the possible reasons for harassment of quality control personnel.

J. A. Hind

-3-

November 30, 1981

The state officials expressed their appreciation for our meeting with them, were satisfied as to our past efforts in keeping them informed of developments at Zimmer, and expressed their continued desire for future communications on this issue.

  
William B. Menczer  
Regional State Liaison Officer

Enclosure: List of Attendees

cc w/o encl:

J. G. Keppler, RIII

~~J. E. Foster, RIII~~

R. F. Warnick, RIII

cc w/encl:

R. D. Smith, NMSS

J. D. Saltzman, OSP

D. A. Nussbaumer, OSP

D. Weissberg, OSP

S. N. Salomon, OSP

R. F. Trojanowski, RII

J. L. Montgomery, RIV

D. J. Sreniawski, RIII

AC Aquilla  
 Florence, Kentucky 41042

December 11, 1981

Mr. Nunzio J. Falladino, Chairman  
 Nuclear Regulatory Commission  
 Washington, D. C.

210

Dear Mr. Nunzio:

This letter is in response to the latest NRC report of its Investigative findings at the Zimmer plant.

This report by its volume and excess of drivel shows two elements prevailed.

1. Where you are unable to be convincing with fact, confuse this with drivel.
2. Bigger is better! So make it so long and boring nobody reads it thru.

For a nation that can put a man on the moon with the extreme complexities involved, we seem nearly unable to build a nuclear plant to simply boil water in a safe and reliable manner. The fact that so many unresolved safety questions arise is the FOREMOST problem we should attempt to resolve first.

Change is the way of all life. Proven needs dictate change. Overall many of the problems at Zimmer are not unique, but typical. Therefore the solution must start in the overall control area.

The principal objective of this letter is to be constructively critical.

Nearly 50 years ago I started out as a Machinist apprentice. This was a formal 4 year program which included 4 hours of class room study, on our own time, per week. Our Instructor was a retired Machine Design Engineer. One of his first stories involved the proven need for change. He explained that in World War One many parts made in one area of the country would not go together with mating parts made in another area of the country due entirely to minor differences in STANDARDS in use. The corrective action was the setting up of the Bureau of Standards to have one set of Measuring Standards nationwide. This "change" solved the problem.

I was very closely involved with another Major change that occurred at the start of World War Two. The tremendous increased need for Machinists was "solved" by increasing use of "Machine Operators" with a minimum of training and experience. This created the need for "Set Up Men" and for Inspectors to check the work produced by the "Operators". What was lost was the old fashioned "pride of workmanship" which gave us quality of product. Inspection in itself was not enough. It was entirely contingent on the skill knowledge and effort of the individual inspector. In order to more effectively control the inspection activity setups were started which are the forerunners of QC as we know it today.

The Air Force and Aircraft industry were in the forefront of development of QC development as a "tool" to insure quality and safety. The cost of a QC program was justified on the basis if it prevented one accident involving hundreds of lives, its cost was justified. Using this cost justification, wouldn't it seem reasonable that we should have a Super QC program for Nuclear work where a single accident could involve hundreds of thousands of lives? The possible risk could be 1,000 times greater!

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I feel sure you will agree that the American aircraft industry in its entirety has compiled a tremendous record for dependability, reliability and most important of all nearly perfect safety. QC is the single most important factor in this achievement. How then in a relatively high technology industry where strength versus weight is such a critical factor can we be so successful with QC and we cannot build a nuclear plant to boil water where strength, weight is not a factor, and we try to use QC and the end results are so dissimilar?

Once we ask this question and start to look it is relatively easy to find concrete reasons for completely opposite end results. Starting at the very beginning, I have found that only in plants where the utmost in quality of product was demanded from the very top people in management did this penetrate down to every employee. In every instance where this was not a top priority with the people on top, quality problems was the direct result. Quality starts at the top and will go down. It will never start at the bottom and go up. It is that simple. Utilities in particular, and those with all their construction experience in coal or oil fired plants built in a conventional manner cannot see the need or reason for QC in nuclear plants. Where they don't believe in the need they then only go thru sufficient motions in the direction of QC to be considered as complying with the Licensing agreement.

The old saying of "Well begun is half done," is very applicable in this situation. Where or when we start off poorly we usually end up poorly. Then when we progress from this bad initial attitude to a minimum QC effort we get the end results we are now finding.

Basically QC is relatively simple. It is a planned program of Inspection activity to uncover deficiencies that are undesirable. On a simple part for example every dimension to be checked is called out. Deficiencies are shown as Minor, Major and Critical, determined by the tolerances called out on the print. Any part with a deficiency is set aside until prescribed disposition has been made. This is the meat and potatoes area of QC. Good, proper and prompt disposition. On aircraft parts disposition of Major and Critical defects requires unanimous approval of the following people. Air Force representative, Product Engineering representative QC representative, Production representative and in some cases a customer representative.

It can easily be determined that at Zimmer Inspection was at best hap-hazard. In the area of disposition of deficiencies and errors it approached total chaos! There is a simple explanation for this end result. Everyone knew and felt that the plant was over designed in respect to safety and with two and three backups, so that any time a little "problem" arose they could very easily and safely "take" a little of this redundancy and make a "FIX." Soon this becomes a way of life and becomes an accepted practice. The critical part not recognized is that even the workers see this as a practice and they too start making their own "fixes". We then have no idea of the extent or complexity of their "fixes." I am sure many of the "fixes" are entirely satisfactory. The serious problem is we will never know until it is too late. Note! In the last report in the area concerned with cable loading of trays appears a statement saying in effect that the space loading limitations are "conservative" so overloading them becomes acceptable. This is an example of a major decision based entirely on an opinion. I hope you understand that this is criticism of lack of control that creates this attitude.

There are many things I can not understand, For example in 1975 a Mr. Griffin then the Manager of QC for Kaiser Engineers reported his concern for the utilities failure to set up a proper QC program. The subsequent NRC investigation stated that his concern was not substantiated.

Then when a person takes the time to review the periodic plant inspections made by the NRC two things are very evident continuously.

1. Constant repetition of simple bad safety practices in general.
2. Strong evidence of lack of an adequate QC program.

This then makes a person wonder who in the NRC took the time or effort to read this mans reports? Visit after visit his findings were nearly monotonously similar. They painted a clear picture of complete lack of control.

Now it is proposed to reinspect various items. Many, many items can not be reinspected. On many items you have one opportunity to check them. On many others such as complex assemblies complete disassembly would be necessary.

We then have the problem of evaluating in a proper manner all of the "fixes". Enclosed is an affidavit detailing "fixes" only in the one area of Cable Trays which I took the time to look into. I am sure this same condition exists in many other areas also.

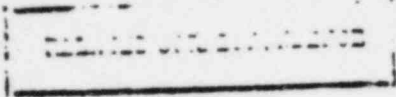
You then have the overall problem of credibility once a progress report must be issued. Only competent and independent people preferably with a background in Aircraft QC programs could even attempt to do what is proposed. Anything less is not only a sham but a complete waste of time and money. The utility does not believe in QC any more today than they ever did. Your own people have repeatedly proven their own incompetence. The only sensible choice remains as independent competent people who will tell it to you as it is. I trust and hope this is what you really wish to find out.

The lessons learned in respect to determining "causes" can be invaluable in preventing their recurrence elsewhere.

Respectfully,

*Edwin P. Hofstadter*

Edwin P. Hofstadter



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AFFIDAVIT OF EDWIN P. HOFSTADTER

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The story on cable trays starts with Browns Ferry Fire and the NRC report on it. This report pointed out what happens in a relatively small fire to all the control cables, when they are stacked one on top of the other. The report concluded by asking C.G. & E. what their plans were, to prevent a similar occurrence.

C.G. & E. replied that design work had not started in this portion of the job, but they would advise Sargent & Lundy to follow this recommendation.

Sargent & Lundy failed to do this, with the result that the Zimmer Plant cable trays are stacked one on top of the other. This is the same condition that existed at Browns Ferry.

The size of the cable trays was determined through a computer program. The program was faulty, the biggest error being in the amount of area space required. This figure should have been doubled. Trays were ordered 6" by 24" wide. This should have been doubled, to become 6" by 48" inches wide. This is the reason the cable trays are overloaded.

The NRC found out about the trays being stacked. Sargent & Lundy and C.G. & E. proposed to make stacking acceptable by fire proofing each set of trays. It was at this point that I became involved. Husky was working with <sup>AVCO E.P.M.</sup> Aree on a material applied to a ventilated tray, placed under a regular cable tray. This material applied approximately 1/8" thick would expand 300 to 500

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times at a temperature of approximately 400 degrees. This material was fire proof and with this much expansion a fire proof blanket surrounded the cable tray, providing fire protection for the cables.

Husky was asked to look at the Zimmer cable trays to see if this would provide them the fire protection they needed. Because of the stacking of their trays, we could not figure out how to adapt the Husky coated, vented tray to the system. This is where and when I saw the overloaded cable trays. Seeing the trays so greatly overloaded, and knowing of the weak material problem, plus the bad welds, I felt compelled to report my observations to the NRC.

I was so naive in this respect that I honestly thought the NRC was supposed to protect the general public. It was an extreme shock and disappointment to find that they are far more concerned with covering up embarrassing situations and devising "fixes" to nullify a given condition. All this accomplishes, in the long run, is to prove the old adage "two wrongs don't make a right." In this case the NRC is seeking to prove that many wrongs will make one right.

The story on fire proofing these trays becomes nearly fantastic. A material developed by Babcock and Wilcox was <sup>processed E.P.H.</sup> processed. Babcock and Wilcox tested it and had a U.L. man as an observer who reported what he witnessed. His observations became a U.L. report with a number. Babcock and Wilcox flaunted this U.L.



report number as though it represented U.L. endorsement. Reading the actual report reveals that the "test" was a "farce". The NRC had doubts to the extent that they asked Sandia Laboratories to devise another set of tests. Sandia came up with still another "farce". In order to give the test weight, Sandia had U.L. perform it under their <sup>(Sandia) S.F.M.</sup> own stipulations. The material failed so miserably that the U.L. report states, "the KAOWOLL material burnt like the wick of a candle". This is a direct quote. The material was approved, however.

While this testing was going on, the NRC, Sargent & Lundy and C. C. & E. worked out a "fix" on the overloaded cable trays. The NEI standard for loading of trays is conditioned on area, with 60% of area being the maximum. Their ingeniously simple fix was to put special 4" added sides to the 6" tray to make it look like 10" tray, thus complying with the 60% space limit. This completely ignores two important aspects. First, 10" cable tray is made of much heavier material than 6" cable tray. Where 6" tray can be .094, 10" tray is usually 50% more, at .135. Second, is the factor of load capability. Zimmer tray was rated at 40 pounds to the square foot, with a safety factor of 2.10. This means the maximum load of the tray should not exceed 82 pounds. I have obtained cable loading data (which is not completely current) which shows the actual weight of the cables in the trays to be over 100 pounds per square foot.

Now we come to the area of welding in this bizarre chain of events. I will first show the recommended settings followed by the actual settings used.

	<u>Recommended Setting</u>	<u>Actual Setting</u>
D.C. Volts	20	30
D.C. Amps.	200	300
Volt Control	40	50
Slope Control	8	12

These high settings produce welds with poor fusion, and undercutting, the extremely high heat actually "burns" the parent metal, causing crystallization of the molecules immediately adjacent to the weld. This crystallization, once it has started, continues on, so that in 5, 10, 15 or 20 years the weld breaks, due to "metal fatigue". The only way these welds can be checked with any degree of accuracy is to section the weld and the adjacent parent material, and check microscopically for signs of crystallization. Just as day follows night, you will find this crystallization.

In respect to welding at Zimmer and on the cable supports in particular, NRC Peoples Surveillance Inspection reports detail numerous instances of welding being done by non-certified welders. This is bad for two reasons. First, Ohio State Law requires welders working on new construction to be certified. Second, in most cases where a welder is not certified, he is not qualified. Again, as day follows night, you will have many bad welds.

Also shown in the NRC Surveillance Inspection reports is an almost continuous problem relative to the proper control of welding rod. Again, inevitably, you will find welds made using the wrong filler material. Then, the combination of unqualified welders using incorrect welding rod nearly 100% guarantees a multitude of weld failures.

Most of the above can be substantiated by documents in the Public Records access files.

On visits to coal fired generating Plants I have found that none exceeds the 60% load by area requirement. I have found that the NEI requirement is based on safety because of the heat dissipation needs of energized cables. This extreme overloading at Zimmer greatly increases the heat dissipation problem. This could in itself be a critical factor which must be evaluated.

Basically, if you add up all these items and their interrelationships, you are forced to recognize a completely unacceptable condition now exists. There is no one or multiple "fix" that can correct these basic "wrongs". No other conclusion is possible.

The facts we cannot ignore are as follows:

1. Stacking of trays which nearly caused a disaster at Browns Ferry is basically non correctable.
2. Cable Tray ordered was only 1/2 the required size, resulting in crowding all the cable into trays 1/2 the necessary size. This is how the overloaded tray problem resulted. Overloaded trays carry more <sup>weight E.A.</sup> than the safety factor allows, also creates a heat dissipation problem. This is also basically non correctable.
3. The use of special sides to give the illusion of "unused" space, together with the use of totally inadequate fire proofing material should be investigated for criminal fraud.
4. The bad welds and inferior material used are relatively minor compared to numbers 1. and 2. above.

These are not opinions but facts mostly taken directly from the Public Records file. The critical part is the extremely close relationship these items have to each other. This is a compounded problem with the direst of possibilities inherrent.

*E. P. Hofstadter*

E. P. Hofstadter 8 - 7 - 81

KAISER ENGINEERS, Inc.  
STORES ISSUE (Weld 2 Form)

No. W

87717 110

Date: 5.23.77

SYSTEM Closed Cooling Water WELD NO. GPWR 218  
DRAWING NO PSKIWR 26 WELD PROCEDURE 3.1.9

Stock No.	Description	Qty.	Unit	Unit Price	Amount	Account No.	
						Charge	CR
<del>212-100</del> 7018	3/32 F2						
	HEAT # 421W3111						
	QTY. RETURNED 8oz						
	NET 1-8-						
	HEAT #						
	QTY. RETURNED						
	NET						

ELDER SIGNATURE: Jim K... SYMBOL: K21 TOTAL  
AUTHORIZED BY: J. McA... FILLED BY: TP

RECEIVED BY: JR

KAISER ENGINEERS, Inc.  
STORES ISSUE (Weld 2 Form)

No. W

87717 110

Date: 5.23.77

SYSTEM Closed Cooling Water WELD NO. GPWR 218  
DRAWING NO PSKIWR 26 WELD PROCEDURE 3.1.9

Stock No.	Description	Qty.	Unit	Unit Price	Amount	Account No.	
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ELDER SIGNATURE: Jim K... SYMBOL: K21 TOTAL  
AUTHORIZED BY: J. McA... FILLED BY: TP

RECEIVED BY: JR

Possible HARDWARE

HENRY J. KAISER, CO.

WM. H. ZIMMER POWER STATION

NONCONFORMANCE REPORT

NO. E

PAGE 1 OF 1

1. DWG/INSTALLATION NO. <u>5-405 Oct. B</u>	2. DWG/INSTALLATION NAME: <u>Primary Containment</u>	3. PO/CONTRACT NO. <u>7070</u>	4. SUPPLIER/CONTRACTOR NAME: <u>Kaiser Engineer</u>
5. INSPECTION PLAN NO.: <u>Drywell Steel</u>	6. INSPECTOR: <u>Jim Ruiz</u> <sup>DWO</sup>	7. DATE: <u>2-11-81</u>	8. SPECIFICATION NO. <u>H-2174</u>

ASME Essential/ASME YES  NO

3. DESCRIPTION OF NONCONFORMANCE	10. DISPOSITION	11. DISPOSITION INSTRUCTIONS/JUSTIFICATION
<u>Location: Primary Containment</u> <u>EL. 561 AZ 315°</u>		
<u>System: Drywell Steel Beam #</u> <u>81, containment wall, two</u> <u>angle clips to Beam # 81.</u>	<u>SENT</u>	<u>BACK WITH</u>
<u>Requirements: SPPM 3.1.51 Rev 2</u> <u>Paragraph T. Welding Technique</u> <u>Paragraph Na.11 - Electrode</u> <u>weave shall not exceed</u> <u>3/4 inch.</u>	<u>NO</u>	<u>REPLY!</u>
<u>Deficiency: Two angle clips</u> <u>welded to containment wall</u> <u>and beam # 81 were welded</u> <u>using a one inch weave,</u> <u>on both sides of beam.</u>		

12. REVIEW BOARD (REQUIRED ON ALL ACCEPT/REPAIR DISPOSITIONS)

KEI CONSTRUCTION ENGR. DATE

S&L	DATE	CG&E SPONSOR ENGR DATE	CG&E Q.A.&S. DATE	KEI QAE	DA
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13. REPAIR/REWORK COMPLETE AND ACCEPTABLE

INSPECTOR/ENGINEER DATE

14. CAUSE

15. CORRECTIVE ACTION