

**To:** Wyatt Clark  
Vice President  
SRNS

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**THE REST OF THE STORY**, January 14, 2017

The main reason that I left SRS was a management demand to perform work that I believed to be substandard, and incompetent in my opinion, at a time when the H-Canyon facility was in a state of Deliberate Operations. I had a terrific career at SRS, but it ended with some conflict. Overall, SRS was a great place to work, and consequently I struggled at whether or not I should write this letter at all. In fact, a year has passed since I retired, and my life is quite extraordinary. Even so, clarifying the reason for my abrupt retirement seems reasonable.

The issues at hand were schedule versus quality. Recurrent issues in some projects, engineers sometimes expect more technical investigation than management is willing to invest in. The balance between these two requirements is important to the success of any engineering project, and engineers and management work to solve this problem to obtain a cost effective solution that provides a technically competent outcome. In most cases, effective compromises are reached, but on occasion compromise is not reached. That is, engineering and management do not reach the same conclusion about what needs to be done. In my career at SRS, I have had several such disagreements, and the following discussion considers those disagreements with respect to the larger issue of schedule versus quality.

I do not expect any actions to follow this email; we just disagreed. I do not consider this email to be a complaint, but I wanted to clear up the reason that I retired. After all, I spent many hundreds of late nights and weekends to ensure the success of SRS projects throughout my career. Both SRS and I benefitted from my accomplishments, where I retired as an SRS Fellow Engineer and as a well published engineering author, and my research garnered tens of millions of dollars in cost savings and improved safety at SRS.

**Technical Project Disagreements During My SRS Career**

Although I led numerous successful projects, many major successes were born from management disagreements. In the first example of a significant project disagreement, management demanded that I complete a safety class calculation with conclusions before experimental testing was complete. I believed this request fostered incompetence and refused to comply. I was removed from the project and replaced by another engineer. The other engineer turned down the job due to other responsibilities, but I was not reinstated to the project. The experimental results were completed, while the safety class calculation remained incomplete. Since I was matrixed to the manager who removed me from the project, I decided to ignore his request to stop work on the project. One night while I was working as a shift engineer and work was slow, I completed the calculation and provided project recommendations to install the Advanced Design Mixing Pump in Tank 18 for final cleaning of nuclear waste from the tank. The project was a terrific success. As a result of my calculations, not only was the Tank 18 cleaning project successful, but I wrote several ASME publications on my own time to share the new technology with other companies. I decided to leave the Project Engineering Department and return to work as a Shift Engineer in H-Tank Farm. Success arose from discord.

The second example concerns research at the Savannah River National Laboratory. After earning a PhD in Mechanical Engineering, I asked for a transfer to the Lab to work as a Research Engineer. My first major project was to design a sampler to drill into the wall of Tank 18 to evaluate residual contamination in the steel of the tank wall before the tank could be closed. I recommended a design and a schedule, and I was informed by Tank Farm Management to “rethink” my design to reduce costs. I refused; since I thought that my approach to adapt West Valley technology to the Tank Farm was the best way to approach the problem. I was assigned part of the research, but most of the project was assigned to other

parties. My construction and testing of the sampling drill went very well. Assigned to others, the simplified robotic arm design that I recommended drastically cut costs. Although cost information from West Valley was unavailable, a 40 to 50 million dollar cost estimate was initially estimated for the robotic arm design. The final design constructed by others to remotely operate the sampler did not work at all when tested at the TNX facility; a major project was in jeopardy and headed toward failure. Tank Farm management then asked me to solve the technical problems with the robotic arm design. I solved the technical problems, and the sampler worked as design, where this 2 to 3 million dollar project was salvaged. To solve the technical problems with the robotic arm, I invented a new vibration theory to make the robotic arm work properly and then published this new theory to describe the failure correction. I even noted in my paper that the West Valley design, with their expensive remote controlled robotics, did not actually work as they claimed. H-Area Tank Farm also published technical papers based on my test results. Again a terrific success arose from discord.

In a third example, I was again asked to write a report without completed experimentation to prove the results. I stated that I would not sign a report that I felt to be incompetent. After extensive technical discussion and lectures on how to better disagree with people, additional research was performed, and the final reports were used to better understand mixing processes for radioactive salt wastes that were to be transferred to the Salt Waste Processing Facility. My final research results were ground-breaking in the area of mixing technology. Not only did I publish these results at ASME Conferences, but I wrote an article that was published to 140,000 engineers in the ASME Mechanical Engineering Magazine. This was the first SRS paper to ever be published to this prestigious magazine. Once again, a major technical success arose from discord.

### **Disagreements Prior to Retirement**

The fourth case relates directly to my retirement. I was pressured by management to perform work that I believed to be incompetent, and although I initially conformed to this request I finally decided to perform competent work in defiance of management demands. Let me state the facts to support this claim, as I understand them.

1. For more than 60 years no one understood the erratic operations of an H-Canyon transfer system.
2. That is, an H-Canyon transfer system had not properly operated since the system was installed in the 1950's; i.e., transfers occasionally stopped from an unknown cause.
3. The as-designed jet pump was recently replaced with a different jet and the system performed even more erratically, where the pump shut down and stopped transfers frequently, rather than on occasion as was the experience for many years.
4. An operational readiness review was scheduled, and could be impacted if this jet did not perform properly.
5. Due to the urgency of the problem, I evaluated the issue using pump curves and my extensive experience in fluid flow and piping systems, where I am a nationally recognized expert in pipe system fluid transients.
6. I recommended an immediate installation of the previously installed valve and further investigation into flow anomalies in this system.
7. The valve was replaced with the original valve at my suggestion, and I started the investigation for a better design.
8. I assisted H-Canyon operators on multiple shifts to better understand the system operations for this transfer.
9. With the assistance of SRNS staff, records dating back to the initial system installation were obtained.
10. Using these records, I determined that a differently designed valve would improve system performance.
11. I informed Engineering management that the design calculations would be completed on December 7 to support this recommendation. I remember the dates because I heard the dates repeated every day for weeks.
12. I was told repeatedly to complete the recommendations by December 1, and that engineering calculations would not be required, which seemed incompetent to make recommendations for a safety class system without even finishing the calculations.

13. I was berated on my annual performance review for not understanding system schedule requirements. The only schedule disagreement that I had with management was with respect to this design. I was being punished for disagreeing with management on schedules versus quality.
14. Even so, I complied with Engineering management demands, and submitted an engineering recommendation for the new jet pump design. In that recommendation, I stated that engineering judgement was relied on for a technical decision.
15. I was disappointed in my performance.
16. I came to work on Friday, December 4 to competently complete the calculation, and I expected to be alone in the building since that day was a normally scheduled day off for staff.
17. I started the one day calculation in the morning, but my manager was in the building and repeatedly visited the copier near my desk.
18. Every time he came to the copier, I changed my computer screen. I feared that I would be disciplined if I was caught doing competent work.
19. Being afraid of doing a good job I found to be very offensive, and I was actually angered at being put in such a position.
20. By the end of the day I decided to quit, since I did want to comply with a management expectation of incompetent work to meet schedule.
21. I announced my retirement on the following Monday morning,
22. I later submitted a competent calculation on the jet design, based on the work that I completed on December 4.
23. Management offered a transfer, but having spent most of the previous year in training for the H-Canyon, I was ready to leave SRS rather than start a new job.
24. Final calculations were completed and incorporated into an ASME publication before I retired to fully explain the jet operations and the problems associated with H-Canyon transfers. This ASME publication was the first comprehensive explanation to describe H-Canyon system defects in more than 60 years of H-Canyon operations. I completed calculations and wrote the paper on my own time (weekends) since I was not allowed to write this paper on company time.
25. I retired on January 1, 2016, even though I had started PhD research in Nuclear Engineering to coincide with my enthusiasm for working at the H-Canyon.

My final calculations were used to provide recommendations to H-Canyon Operations management to replace the jet and improve H-Canyon transfers. On my own time, I published my new findings from this work on jet performance to the ASME Power Engineering Conference. This report proved my opinions for recommendations to improve transfer performance in the H-Canyon. Although another engineer ultimately won the ASME, 2016, Power and Energy Conference Award for Best Paper, this paper on jets was nominated for consideration as the best paper at the Conference. Once again, technical success arose from discord.

### **Career Accomplishments**

Obviously my career has been peppered with technical disagreements. In fact, I earned a PhD and wrote a book on water hammer, again on my own time, where that work started as a disagreement with management who stated that I could not prove water hammer damages occurred in H-Area. My research not only proved that previous water hammer damages occurred in H-Area, but that more than 15 million dollars in future damages could be prevented. Following my recommendations, 20 years of piping failures abruptly came to a halt. Not only did SRS management disagree with my opinions on water hammer, but university professors and practicing engineers disagreed with my new theory to correct water hammer damages and prevent water hammer accidents. Experimental SRS testing of my new theories (under your direct management approval) resulted in widespread acceptance of my new theory, following much discord. After developing this new theory on piping failures and water hammer, I published many papers and an ASME text book on the topic, in addition to teaching week long ASME classes around the country.

Although retired from SRS I continue full time research, where I am currently enrolled in a Nuclear Engineering PhD research program to earn a second PhD. I am researching explosions and fires in nuclear reactors. To that end I am taking university classes and I am taking a dozen classes on computer

modeling of nuclear reactor systems. The US NRC disagreed with my opinions on the causes of ignition for a fire at Three Mile Island and explosions at Fukushima Daiichi and other nuclear facilities. My next publications to prove my new theory on fires and explosions will be published at an ASME Nuclear conference in Shanghai in a few months. Nuclear reactor safety and safety throughout the nuclear industry will improve as I continue this ongoing research, which again arose from much discord.

### **Summary**

In our conversations, I know that you are very concerned about competent performance by SRS employees, but schedule and technical requirements are always an issue, since SRS is a business that needs to maintain safe operations. I offered a few examples of schedule and cost versus quality, and even though these requirements are all of great importance to SRS, disagreements on their relative importance sometimes cause discord. In each of these cases I learned a common theme, "One cannot argue with someone who does not care". All of my past disagreements were with managers who wanted to do a good job, but we differed on the way to do a good job.

All in all, I have found that integrity, like honesty, makes life simpler but comes with a price. I could have "went along to get along", but few of my accomplishments would have followed. I am proud of standing up to management for what I believed to be right throughout my SRS career, where my resultant accomplishments improved SRS operations, and my more than 60 engineering publications, including an ASME book, improved operations at other facilities as well as SRS. I had a good career at SRS, which was greatly improved by the integrity to perform first rate quality work. I can look back at my career with the knowledge that my paycheck was well earned, and my accomplishments helped others.

With respect,

Robert A. Leishear, PhD, P. E.