

## Joosten, Sandy

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**From:** Ace Hoffman [rhoffman@animatedsoftware.com]  
**Sent:** Wednesday, May 29, 2013 12:38 AM  
**Subject:** Shocking letter from 2004 shows SoCalEd was concerned all along about ... profits!

May 28th, 2013

Dear Readers,

If I ever actually hear that San Onofre Nuclear [Waste] Generating Station is being decommissioned, I'll start to believe that we'll soon be left with only the spent nuclear fuel problem to deal with.

I haven't heard anything like that, but we definitely got one step closer to decommissioning today. Senator Barbara Boxer was calling SoCal Edison's statements "gobbledygook." Dave Freeman, former head of the federal Tennessee Valley Authority and senior advisor to Friends of the Earth says: "The San Onofre restart plan is now deader than a doornail. It's over." Damon Moglen, climate and energy director for FOE says: "The restart of San Onofre reactors is now off the table."

I hope the FOE experts are right, but nobody can be sure until the decommissioning begins, and even if they are right, we still have a pile of deadly nuclear waste to deal with. It's "just" not getting any bigger right now and if there's no restart, it won't get any bigger ever again. Also, as it ages, the spent nuclear fuel becomes somewhat easier to handle, although it will remain very difficult and dangerous to deal with for hundreds of thousands of years.

SoCalEdison had always planned to walk away from the problem of what to do with the waste. It was always just a question of when they would walk away from the mess they had made.

It's still possible that somewhere at SCE, some Vice President is writing a letter just like the one uncovered today from November 30th, 2004, which clearly says the steam generators are obviously not going to be "like-for-like." It also clearly states that performance is as critical as timing -- the replacement steam generators were expected to perform at 106% of their original reactor thermal power capabilities, which they are now licensed for. The letter also makes it clear that the RSGs must be designed and delivered on time. To do so, a lot of corners were cut.

Without decommissioning, "no restart" appears to mean "no restart unless the steam generators are rebuilt." That is approximately a five-year process that may or may not have even begun, but if it has begun, it could not have gotten very far, in part because the design of steam generators for pressurized water reactors with only two steam generators is very difficult -- it seriously is! Three steam generators, or four, is a much more common and workable arrangement. They didn't even get close to getting San Onofre's unique steam generators designed right the first time, or the second, and unit three is trashed, and unit two is seriously damaged, but not as seriously as unit three is. (Unit 1 has already been decommissioned.)

All the recent government actions against SCE will amount to nothing but a few years' delay (at most) without decommissioning. Without decommissioning, the plant is expected to reopen eventually. But, under current federal law, if San Onofre is "decommissioned" (which means dismantled), then its license is abandoned.

Currently, San Onofre Unit two can be restarted in a matter of days, if permission is granted by the NRC. The uranium-235 enriched fuel is fully loaded, the coolant loops have been

sealed and resealed, and pressure tested and retested. Control room operators are ready to withdraw the control rods and resume operation.

It may sound like we're close to a breakthrough because a letter was made public from nearly ten years ago, from a guy who resigned eight years ago and has "no comment" now when reporters asked. And it's good to hear a Senator condemn SCE's apparent utter disregard for the safety and welfare of the 8.7 million citizens who live within 50 miles of the plant, and the tens of millions more who live just beyond that artificial marker. But I don't hear Ted Craver saying "we are starting the decommissioning process of both units, effective immediately."

To have SanO finally decommissioned would mean we would still have to figure out what to do with the waste that was already created, which is no easy task. But pretending that the waste problem can wait has been our biggest mistake so far.

Meanwhile, the engineering quicksand continues to drag Edison under. One of their main reasons for assuring the public that Unit 2 is different from Unit 3, and that because of those differences Unit 2 won't suffer from fluid elastic instability like Unit 3 did, is the claim that Unit 2 has twice the contact forces of Unit 3 in the u-bend region where the steam generator tubes are butted up against the anti-vibration-bars. The problem with that claim is that industry experts -- hired by SCE -- have stated that 10 to 30 times the contact force is necessary, not just double. How many nails does SanO's coffin need?

Decommission San Onofre NOW. Green jobs for all.

Ace Hoffman  
Carlsbad, CA

The 2004 letter:

[http://www.epw.senate.gov/public/index.cfm?FuseAction=Files.View&FileStore\\_id=ccfadddd-50a3-4947-8a49-45e54e9dd2a4](http://www.epw.senate.gov/public/index.cfm?FuseAction=Files.View&FileStore_id=ccfadddd-50a3-4947-8a49-45e54e9dd2a4)

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## Joosten, Sandy

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**From:** Ace Hoffman [rhoffman@animatedsoftware.com]  
**Sent:** Friday, May 24, 2013 6:34 PM  
**Subject:** Edison's sneaky plan to restart San Onofre Unit 2... and then Unit 3...

May 24th, 2013

Dear Fellow Activists,

As of today, Southern California Edison still has every intention of restarting San Onofre Nuclear "Waste" Generating Station. Nothing has changed that desire. It seems they will take any risk in order to restart the reactor, and even having to pay for this entire steam generator fiasco from their own pockets won't stop them (though that appears unlikely).

A fully adjudicated license amendment proceeding with sworn testimony, expert witnesses, and cross-examination won't stop them. Even if it takes five years, they'll wait -- even if it takes ten. All these delaying tactics are aimed at either the inevitable -- decommissioning -- or the impossible -- continuous operation ad infinitum. If it re-opens, it will be impossible to keep it open forever, since the entire plant has degraded, sitting by the sea decade after decade. There will be other problems, there will be license renewal procedures, there will be other major parts replaced. There will inevitably be more emergency shut-downs after something "unexpected" goes wrong. But they want to restart it anyway.

San Onofre's spent fuel storage plans are to just keep growing the dry cask farm. That's it -- that's their whole plan. To leave the most dangerous material on earth -- spent nuclear fuel rods -- in the most dangerous location on earth (in a mega-earthquake and mega-tsunami zone).

Here is a perfect place to stop the spiral of madness, and cease risking disaster and piling up waste. But instead, all we get are delays. The Nuclear Regulatory Commission has all but said there will be no restart again this summer, but at the same time "okay to restart" seems to always be on the tip of their tongue. Why?

Is it really because some mathematical calculation of the flow rate of the fluid across the U-tubes suggests a maximum of 22 to 35 feet per second (even though it might really be 50)? It's not like it has been measured and verified, only calculated from numerous approximated factors. But supposedly it's the technical crux of the problem, or at least one of the technical cruxes. But is the real problem an inherent push to restart? Yes.

Edison CEO Ted Craver made no promises that they would decommission SanO at the end of the year if the NRC didn't approve a restart: He only said it was a possibility. Nuclear war tomorrow is a possibility too. So is sunshine.

It was clear at the California Public Utilities Commission's hearing last week (which included fully adjudicated sworn testimony with expert witnesses and cross-examination, but very little sunshine) that SoCalEdison is ready to restart Unit 2 virtually tomorrow. Nuclear fuel has been fully loaded into the reactor, the reactor pressure vessel is bolted down tight, the pumps and control mechanisms have all been tested... and their calculations say it'll work.

They just need the NRC's permission.

Last week, during the CPUC's investigation into the San Onofre outage, SCE officials made it clear that they are still going full-tilt towards restart, even if it takes five years and

requires replacing all four steam generators. They are doing this with public money and no shame. They have never for an instant planned to do anything else.

The reason?

It's because they have transmission lines capable of carrying 2,340 megawatts of pure gold -- profit -- which would be rendered virtually useless if SanO is not restarted.

San Onofre itself isn't especially valuable comparatively - its two licensed units are already 30 years old, and Unit 1 has been demolished (its spent fuel remains on site). It would cost close to \$20 billion each to replace San Onofre's aging reactors with new units, and the opposition would be powerful against such an idea, including the economists. Ratepayers would be furious. Even before the leak that shut Unit 3 and prevented the restart of Unit 2 (so far), Edison would have had a tough time selling San Onofre to anyone. Even Michael Peevey says now, no one would buy it. Mr. Peevey would buy it out of our own pocket if he could.

But the transmission lines? Those are very valuable, not only for their transmission capabilities but also as land rights-of-way. SCE would NEVER want to sell those -- as long as there's something to feed them: Massive generators at their starting terminus. Solar rooftops are of no help to SCE in maintaining the value of those transmission lines.

Unit 3 rattled itself to death a year ago last January but is believed (by some) to be repairable eventually, and Unit 2 nearly did the same, but they operated Unit 2 at a higher pressure and lower reactor coolant flow rate than Unit 3. Consequently, Unit 3 fell apart, but Unit 2 maybe didn't, at least not as much.

At the top of the U-tubes, where the "U" is, Unit 2 had more water mixed in with the steam than Unit 3, and lower fluid velocities, and thus, less vibration. A mixture of other operating conditions were slightly different between the two units, and the proposed steps to "fix" the problem asserts that the planned operating regime ensures that Unit 2 will not be operated at anything like the conditions that Unit 3 was operated at.

There are numerous problems with this approach. First of all, there is the "Main Steam Line Break" accident scenario, in which the piping from one of the steam generators breaks off for some reason (perhaps an earthquake), This causes a sudden and complete drop in pressure inside the steam generators (but outside the U-tubes). This, in turn, causes essentially the same conditions that existed in Unit 3 which shook it apart, known as Fluid Elastic Instability. The tubes rock back and forth in unison, and the vibrations continue -- and accelerate -- until the tubes hit something or break off.

But that's not the only worry with Unit 2. Additionally, the vibration damage is already quite extensive, as indicated by the wear amounts of each tube. But the tubes aren't just damaged from wear. Wear from one part rubbing against another part is visible, detectable, and measurable. (When they saw all the wear in Unit 2 after its January 9th, 2012 shutdown, one has to ask why then didn't immediately shut down Unit 3.) The steam generator U-tubes in Unit 2 are also damaged from fatigue. Fatigue wear is much harder to detect than thinned tube walls resulting from the tubes rubbing against other tubes and against support structures. Fatigue can cause circumferential cracks to form at "hinge points" such as the topmost Tube Support Plate (TSP), which takes the most lateral forces from the tubes, especially during in-plane fluid elastic instability.

The early stages of fatigue damage can be very difficult to detect. Perhaps more troublesome is that a microscopic, virtually undetectable crack can blossom circumferentially, completely severing a ruptured tube in fractions of a second. The fluttering from FEI might coincide with both a main steam line break and an earthquake or aftershock. All three might put force on the tube at once, but Edison has not included FEI in its calculations of tube stresses

that might occur during the five-month "test" of San Onofre at 70% power. It's just one of many things that don't add up. Perhaps it's one of the reasons the NRC hasn't let SCE restart SanO yet, but we'll probably never know, because so much information is "redacted" as "proprietary."

Another Edison claim is that the "anti-vibration bars" at the top of the U-tubes in Unit 2 have double the contact force of the AVBs in Unit 3, and this both prevented FEI and will continue to prevent FEI from occurring in the future. There are several problems with this claim, the first one being, that such a contact force MAY be good at stalling or preventing FEI for a while, but once it is overcome (and it can be if the forces are significant enough (such as during a main steam line break)) it's not nearly enough contact force to stop FEI from running wild. That would require contact forces 30 times greater than what Unit 3 had, and 15 times greater than what Unit 2 has.

In fact, that's how much contact force Mitsubishi's proposed "long-term fix" that was announced last week has -- 30 Newtons of contact force instead of one or two. The problem is, those extra AVBs (at the 45 and 135 degree angles) will only be for SOME of the tubes, but in a main steam line break accident condition, ALL of the tubes may be experiencing fluid elastic instability, even the damaged tubes that have been taken out of service.

There are more extensive fixes to San Onofre's steam generators that can be applied, but those fixes require completely rebuilding the steam generators, which will take five years and surely will require an open public licensing amendment proceeding. Edison is willing to take the time and wait it out. They own two licensed reactors. They have transmission lines that need to be fed in order to make a profit. Solar power rooftops can replace the power from San Onofre, but they cannot replace the profit.

At some point, Mitsubishi will probably announce that they are willing to pay all or most of the design and manufacturing costs for the replacement steam generators. It's just a business decision, having nothing to do with making SoCal ratepayers happy, but it will make the CPUC jump for joy. They'll do it because their reputation as steam generator manufacturers is at stake. They sold us very poorly designed units! The announcement of free replacements will probably come just when the activists are almost winning on monetary grounds at the CPUC, if that ever happens. MHI (or a subcontractor) may already have started fabricating them, somewhere in Japan.

While waiting for these new steam generators to be built and delivered, naturally, Edison wants to run the plant and just hope they don't have any big problems like a main steam line break. Running the plant is impossible with Unit 3 because of damage that has already been incurred, but is that true of Unit 2, too? For more than a year Edison has claimed to be on the cusp of proving Unit 2's extensive and unprecedented damage is controllable, and that's the key word. Tube wear will continue under ANY restart plan, but not so fast at 70% power output as at 100% power output. After five months they'll shut the reactor down and take a look. If their predictions are correct, they plan to add new anti-vibration bars at 45 degrees and 135 degrees and try again. My guess is that second "test" will also be for only a few months (perhaps seven or ten), and at a slightly higher power level. Edison has already been asking for the right to turn up the dial as much as they want after the first test run at 70%, if things look alright. They don't want to have to come back to the NRC to ask for permission to add more power after each test run.

But from an engineering point of view, so what if the test works? Surviving operating conditions does NOT prove that Unit 2's damaged and defective steam generator tubes can survive transient events.

At some point, SCE plans to run Unit 2 at 100% until the new steam generators are manufactured and ready to be installed. Probably nothing can completely arrest the wear at operating conditions, so any fix is temporary. Unit 3 cannot be restarted without steam

generator replacement because of the amount of wear and the numbers of tubes that are worn. However, SCE has no intention of closing the plant and doesn't care what it costs the ratepayers during the extended outage.

That is why, if we don't want there to be a catastrophic accident, we need to demand immediate decommissioning of San Onofre Nuclear Waste Generating Station. Decommission means dismantle. It means make restart impossible. It means take away SCE's license to operate a nuclear power plant.

Decommission now. Solar and wind power forever.

Now is the time for southern California to switch to safe solar power!

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