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Dear readers of the WISE/NIRS Nuclear Monitor,

In this issue of the Monitor:

- The new owner of the Oskarshamn reactor in Sweden plans to invest to keep it operating.
- Georgia Power recommends completion of the last remaining nuclear new-build project in the US – but many obstacles remain.
- Two articles dissecting claims that the US needs a strong civil nuclear industry to support i) the domestic nuclear weapons program and ii) the country's international non-proliferation initiatives and broader geopolitical interests.
- Updates from Japan.

The Nuclear News section has reports on the distribution of iodine tablets in the German city of Aachen, a large protest against a proposed nuclear power plant in India, and Canadian uranium company Cameco settles a tax dispute with the US government.

Feel free to contact us if you have feedback on this issue of the Monitor, or if there are topics you would like to see covered in future issues.

Regards from the editorial team.

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Sweden: New owner to invest in remaining Oskarshamn reactor

Author: Charly Hultén – WISE Sweden

NM850.4675 Uniper Sweden, which holds a majority stake in the operator OKG (Oskarshamn Kraft Grupp), committed SEK 865 million (€94m, US\$105m) to safety improvements in O3, the single remaining reactor at Oskarshamn. The decision was a long time coming.

As reported earlier (Nuclear Monitor #807, #846), Sweden's nuclear park is shrinking. Twelve reactors will soon be only six. O1 and O2, small and chronically ailing reactors at Oskarshamn, have now been taken off-line, while two similarly small and ailing reactors at Ringhals are on track to shut down within the next two years. For reasons of public safety, two reactors at Barsebäck, directly across The Sound from metropolitan Copenhagen, were the first to go, in 1999 and 2005.

The fate of the remaining reactor at Oskarshamn has been hanging in the balance since mid-2015, when then-majority owner EON announced it would divest itself of all nuclear holdings in favor of renewable energy sources. Two clouds combined to darken O3's horizon: an EU requirement that all reactors in the Union be equipped with independent core cooling by 2020 implied major investments, just as electricity prices in Europe fell into a protracted slump.

Now, the new majority owner is unreservedly optimistic. In conjunction with the announced investment, Roger Strandahl, spokesperson for Uniper Sweden, said that OKG intends to operate O3 until 2045 – at which point the reactor will be 60 years old.

'Independent core cooling' is shorthand for a reserve system for cooling the fuel core that will operate regardless of the state of the reactor. The requirement was issued after the disastrous tsunami crippled reactors at the Fukushima Daiichi plant in Japan in March 2011, resulting in multiple meltdowns.

SSM, Sweden's Radiation Safety Authority, has specified what the system has to be able to withstand. The list includes more extreme external factors than have been analyzed to date, for example earthquakes and flooding with total loss of power from external networks and scenarios where normal access to water from the Baltic has been cut off.

The chosen solution is considerably simpler than earlier proposals. For one thing, it is a low-pressure solution. In the event of total power failure, pressure in the reactor tank will be reduced by transferring steam to the condensation pool via the reactor's RAMA filter.

The system consists of two pumps, each powered by its own diesel motor. The larger pump will start whenever the water level in the reactor tank reaches a predefined level. It has the capacity to fill the reactor tank with water from the central pool within one hour. The need for water is presumed to decline as the decay power in the fuel subsides. The lesser pump will start up after about two hours and cool the core as long as is necessary using water from the central pool, the firefighters' water system and, if needed, water from a nearby reservoir.

The switch to a low-pressure solution means that the new facility can be less complex and will require less space. Reliance on the reactor's RAMA filter to remove heat affords a substantial simplification of the electrical

system. The proposed solution was approved by the Radiation Safety Authority earlier this year. According to plan, it will be in operation by the end of 2020.

The prospect of a tsunami in the Baltic Sea is hardly a real concern, but many Swedes recall an incident at Forsmark, north of Stockholm. There, in 2006, the reserve cooling system failed because of a partial power outage in the control room of a reactor. Subsequent analyses suggest that the reactor was about 20 minutes from a meltdown by the time reserve power could be put in place. The incident reportedly caused Swedish authorities to revise the estimated risk of reactor meltdown upwards by factor 780. In other words, the EU requirement comes none too soon.

Is this the classic happy ending? No, it is rather only a beginning, and some major questions remain unanswered. Will, for example, O3 last the full 60-year stretch and pay off its owners' investment? Will the electricity market support the reactor's production costs? Will Swedes find the risks associated with such an aged reactor acceptable? There are no guarantees.

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News articles in Östra Småland, 19 and 24 August 2017.

A document (in Swedish) on OKG's site describes the safety system: www.okg.se/Documents/Press/OBH_KP16.pdf

Georgia Power recommends completion of Vogtle AP1000 reactors

Author: Jim Green – Nuclear Monitor editor

NM850.4676 Southern Co. subsidiary Georgia Power filed a recommendation on August 31 with the Georgia Public Service Commission (PSC) to complete the two AP1000 reactors under construction at the Vogtle plant.^{1,2}

So Vogtle is the only new-build nuclear project still alive in the US after the abandonment of the two partially-built AP1000 reactors at the VC Summer plant in South Carolina. In several states, utilities and companies hold licenses to build new reactors, but those projects are being abandoned one-by-one and none will proceed in the foreseeable future. In recent weeks Duke Energy has abandoned plans for two AP1000 reactors in South Carolina and two AP1000 reactors in Florida (and in 2013, Duke abandoned plans for two AP1000 reactors in North Carolina).³ In Florida, Duke abandoned the nuclear project in favor of a US\$6 billion investment into 700 megawatts of solar PV capacity, 50 megawatts of energy storage, 500 electric-vehicle chargers, and smart meters and grid modernization across the state.⁴

The recommendation to proceed with the Vogtle project was supported by all owners of the project – Georgia Power (45.7%), Oglethorpe Power (30%), MEAG Power (22.7%) and Dalton city (1.6%). The recommendation will be approved, modified or rejected by the PSC. A decision is expected by the end of February 2018.²

The Vogtle project is 66% complete overall according to Southern Co., and construction is 44% complete.⁵ Originally, the reactors were expected to go online in April 2016 and April 2017⁶ and the company now hopes that unit 3 will begin commercial operation in November 2021 and unit 4 in November 2022.²

Georgia Power also announced on August 31 that it has contracted Bechtel to manage daily construction work under the direction of Southern Co. subsidiary Southern Nuclear, which operates the existing two reactors at Vogtle. Westinghouse is no longer the lead contractor after its bankruptcy filing in March, but remains on-site

providing engineering, procurement and licensing support, as well as access to intellectual property needed for the project.⁷

Alternatives to Vogtle

Georgia Power said it evaluated alternatives including abandoning one or both of the AP1000 reactors or converting them to gas-fired generation.²

The option of replacing the partially-built reactors with renewables and energy conservation and efficiency seems not to have been considered. A recent analysis by the Greenlink Group in Georgia concluded: “The bottom line is that Plant Vogtle has priced itself out of the market. At this stage it is no longer the most cost-effective way of delivering low-carbon energy to Georgia’s grid. Customers are better served by foregoing the project and devoting even a fraction of the ongoing costs toward additional investments in energy efficiency and solar.”⁸

Moody’s unimpressed

Bond ratings firm Moody’s said on August 31 that Georgia Power’s recommendation to continue the Vogtle project is “credit negative” and that Georgia Power’s rating outlook therefore remains negative.^{9,10}

Moody’s was unimpressed by just about everything to do with the project and the recommendation to proceed, noting that:

- costs are “open ended” and are likely to exceed the current estimate;
- the lack of a fixed-price contract (with Westinghouse) is a “key risk”;
- the cost per kw-capacity “is materially higher than alternative sources of generation”;
- efforts to foist further costs onto ratepayers may not be approved;
- delays beyond the current schedule can be expected;
- it may not be possible to hold the project-owning consortium together for the duration of the project; and
- nuclear reactor construction is an activity “well outside” of the “core competency” of Southern Nuclear.

Cost increases

Georgia Power estimates that the capital costs for the two reactors will amount to US\$19 billion.⁷ In addition, financing will cost Georgia Power US\$3.4 billion. If other project partners face similar financing costs, the total cost for the reactors will be about \$25.4 billion.

In early August, Southern Co. said the cost is likely to exceed US\$25 billion dollars and could top US\$27 billion.¹¹

An analysis by the *Augusta Chronicle* found that costs could approach US\$30 billion.¹²

On current projections, the project is likely to cost around twice as much as Southern Co.’s 2008 estimate of US\$14 billion^{6,11}, and of course there is plenty of work to be done to complete the project and plenty of scope for further cost overruns and delays.

‘Irate payers’

Under a controversial pay-in-advance state law, Georgian ratepayers have already paid around US\$2 billion towards the cost of the Vogtle project.^{13,14}

The *Augusta Chronicle* states that the Vogtle project is currently adding 5% to ratepayers’ bills and completing the project will boost that to 10.3% if the project proceeds according to the current schedule.¹²

Georgia Power recently said that failure to allow it to recover all of its costs from ratepayers would be grounds for project partners to abandon the project.¹⁵

Dan Yurman noted on his *neutronbytes* blog that some of Georgia Power’s project partners may not want to pass along rate increases to their customers, which might change overall risk assumptions about the project.¹⁵

Paul Gunter from Beyond Nuclear questioned whether ‘irate payers’ will continue to wear Vogtle’s costs: “So the only way that you can revive nuclear power is going to be through socializing its financing through the rate payer and the taxpayer. But at this point, we’re seeing the rate payer become the irate payer – when you waste billions and billions of dollars and decades on a predictable outcome.”¹⁶

The Southern Alliance for Clean Energy and other watchdogs have called for an emergency PSC public hearing to re-open the question of whether spending on the plant has been prudent (a legal requirement for charging ratepayers), and whether the project ought to be scrapped. They point to Southern Co.’s refusal to insist on the use of modern construction management tools, and its persistent lack of candor reporting on progress and likely future construction outcomes.¹⁷

Dr Stephen Smith, executive director of the Southern Alliance for Clean Energy, said of the recommendation to proceed with Vogtle: “Southern Company’s decision is an anomaly, a very expensive one. Even as every other utility realized the extreme risks to their shareholders and customers and correctly decided to stop the financial bleeding, Southern stubbornly presses forward. It’s imperative that Georgia regulators at the Public Service Commission conduct an open and transparent process and protect ratepayers from these unfair financial burdens – ensuring that all additional risks be borne by the Company and its shareholders. Further, the Vogtle project has already benefitted from many billions of dollars in federal taxpayer funded incentives – not one more dollar should be doled out to this project at taxpayers’ expense.”¹⁴

Mark Woodall from the Sierra Club said: “By hiring more than 70 lobbyists and passing Senate Bill 31 in 2009, Georgia Power has now managed to steal over \$2 billion in ratepayer money for financing and profit on Vogtle. Their construction process is a tale of greed and incompetence. This must stop. It’s time to move forward on a clean energy future of solar, wind and energy efficiency with no more money wasted on the dirty, dangerous, risky boondoggle underway at Vogtle.”¹⁸

Tax credits

In addition to pay-in-advance ratepayer charges, completion of the Vogtle project also depends on

the availability of tax credits, loan guarantees, and Westinghouse's parent company Toshiba making good on its promised payments totaling US\$3.68 billion over the next few years to meet contractual obligations arising from Westinghouse's role in the Vogtle fiasco. Georgia Power said in its PSC filing that if any of those three outcomes isn't realized, it may have to revisit its decision to complete the Vogtle reactors.¹

Federal tax credit legislation would amount to a subsidy of around US\$2 billion but Vogtle won't qualify unless the qualification period is extended. A bill to extend the qualification period was passed in the House in June but it still needs endorsement from the Senate and the White House.¹⁹

Loan guarantees

Vogtle partners are also asking the Trump administration to speed up disbursements of US\$8.3 billion in federal loan guarantees approved under the previous administration.²⁰ The loan guarantees subsidize the project by reducing the cost of borrowing, and they also put taxpayers on the hook for billions of dollars should the project be abandoned and the owners default on the loans.²¹

Three of the four project partners – Southern Co., Oglethorpe Power Corp. and MEAG – are seeking additional loan guarantees from the federal government.^{12,22,23,24}

The Department of Energy has been encouraging the companies to apply for additional loan guarantees, *Bloomberg* reported, but the proposal might meet resistance. Thomas Pyle, head of the right-wing American Energy Alliance and head of Trump's transition team for the Department of Energy, said: "The federal government needs to get out of the business of lending money to private businesses, period. Vogtle is no exception. When will enough be enough?"²²

The Trump administration proposed in its fiscal 2018 budget request to cancel the loan guarantee program and to prevent new loans from being offered after September 30. Oglethorpe is seeking an additional US\$1.5–1.6 billion in loan guarantees, on top of the US\$3 billion already secured, and hopes to have the new subsidy locked in by the end of September.²⁴

Toshiba payment

Georgia Power chair and CEO Paul Bowers said that while there is a risk that Toshiba may default on its promised payments of US\$3.68 billion (of which US\$1.7 billion is promised to Georgia Power), the risk is mitigated by a US\$920 million line of credit and the claim filed against the sale of assets in the Westinghouse bankruptcy.¹⁸ Georgia Power is also seeking permission from the PSC to charge Georgian ratepayers for its share of the Toshiba payment if Toshiba defaults.¹⁰

In a filing with the US Securities and Exchange Commission, Oglethorpe Power Corporation said it has doubts "about Toshiba's ability to continue as a going concern" and thus its ability to meet its agreed payments to Vogtle project partners.²⁵ Toshiba itself recently said that there is "substantial doubt about the Company's ability to continue as a going concern".²⁶ That said, Toshiba will likely survive, albeit in a weakened form, after the sale of its memory chip business – its most profitable asset.

Dumped by Trump?

The Vogtle partners are banking on passage of the tax credit extension legislation and more generous support under the loan guarantees program. The project partners are also seeking any other support that might be forthcoming from Washington. "We have asked anybody that would help us achieve the best commercial outcome possible," Southern Co. CEO Tom Fanning said in an August 2 interview.²⁰

A detailed paper by 'Taxpayers for Common Sense' notes that Southern Co. has spent heavily on lobbying federal politicians – US\$12.85 million in 2013 alone, or roughly \$35,000 a day.²⁷ And Southern Co. has been busy lobbying in recent months – Department of Energy logs obtained under the Freedom of Information Act show Southern Co.'s CEO visiting the Department around six times between February and July 2017, including three visits in June.²⁸

James Lucier, managing director at Capital Alpha Partners, said: "On Vogtle and nukes in general the Trump administration is what the Texans call 'Big Hat and No Cattle'. They don't have any ammo in the gun. You hear them talking such a good game about nuclear power and base load power, but the reality is there isn't a lot they can do." Direct aid would most likely require an act of Congress, and getting that done is uncertain.²⁰

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Nuclear power, weapons and 'national security'

Author: Jim Green – Nuclear Monitor editor

NM850.4677 The nuclear industry promotes a complex, interlinked set of lies and half-truths to obscure its connections to weapons proliferation. We untangled that industry propaganda in Nuclear Monitor #840.¹

Discussion about the military potential of 'peaceful' nuclear technologies and programs focuses on the efforts of non-weapons states to acquire weapons. For advanced weapons states, such as the US, we noted in Nuclear Monitor #840 that "incremental growth of nuclear power in the US ... is of no proliferation significance."¹

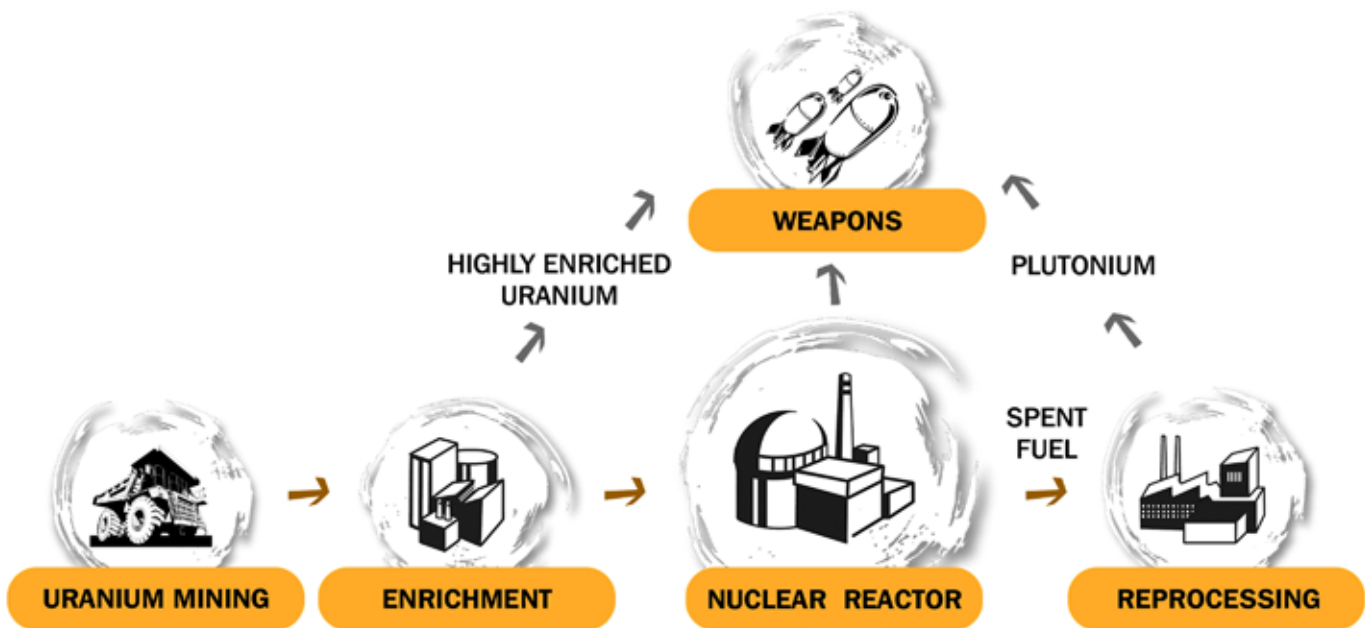
The same could be said in reverse: incremental decline of nuclear power in the US (or comparable weapons states) is of no proliferation significance. But what about a precipitous decline of nuclear power – might that have adverse consequences for the US nuclear weapons program? The answer is 'yes' according to a growing number of nuclear advocates – and that is being put forward as an argument for expanded government support for the troubled US nuclear power industry.

The Nuclear Energy Institute, for example, has been trying to convince politicians in Washington that if the AP1000 reactor construction projects in South Carolina and Georgia aren't completed, it would stunt development of the nation's nuclear weapons complex because the engineering expertise on the energy side helps the weapons side.²

A different argument – that a strong civil nuclear industry provides the experts and expertise to drive international non-proliferation efforts and other geopolitical interests – is common enough (see the following article in this issue of *Nuclear Monitor*). The 'Environmental Progress' group, for example, issues ominous warnings of "global nuclear domination by Russia" and argues the case for massive, multifaceted taxpayer subsidies for the nuclear industry and for a taxpayer-funded bailout of bankrupt Westinghouse.³

A new report by the Energy Futures Initiative (EFI) makes the same argument and arrives at the same conclusions, arguing for massive additional subsidies for the civil nuclear industry in the US including credit support, tax incentives and federal siting and/or purchase power agreements.⁴ The EFI report also advocates establishing a broad-based consortium of nuclear supply chain companies, power-generating companies, financing institutions and "other appropriate entities" to share the risk and benefits of further new-build projects both in the US and internationally.

But there are a couple of major differences between Environmental Progress and the EFI. Environmental Progress is a fake environment group led by paid pro-nuclear lobbyists, whereas the EFI carries far greater



weight – it is a creation of Ernest Moniz, who served as energy secretary under president Barack Obama.

And while the EFI paper runs the argument that effective international engagement on nuclear issues depends on a strong domestic nuclear industry, it also argues that a strong domestic industry is necessary to directly support the US nuclear weapons program. The report states that the US nuclear energy sector “helps the U.S military meet specific defense priorities, supports the implementation of U.S. nonproliferation policy, and is essential to the global projection of U.S. military capability. The flip side is that an eroding nuclear enterprise will compromise important nuclear security capabilities or make them more costly.”⁴

There are profound contradictions between Moniz’s role at the EFI and his role as co-chair and CEO of the Nuclear Threat Initiative. The contradictions between the positions of the two organizations would fill a book. To give just a couple of examples, the Nuclear Threat Initiative argues the case for the elimination of highly-enriched uranium (HEU) in the civil nuclear sector⁵; but the EFI is having none of that – it wants a civil enrichment industry to underpin military production of HEU. The Nuclear Threat Initiative warns that the US and Russia keep nearly 2,000 nuclear weapons on high alert, leaving both countries vulnerable to nuclear launch by accident, miscalculation or cyber-attack⁶; whereas the EFI report states that the existence of the Russian nuclear weapons arsenal underscores the importance of US nuclear weapons to “global strategic stability and deterrence”.

The Navy’s nuclear needs

On the US Navy’s alleged need for a civil nuclear industry, the EFI report states:⁴

“The Naval Nuclear Propulsion Program is comprised of military and civilian personnel who design, build, operate, maintain and manage the nearly one hundred reactors that power US aircraft carriers and submarines and provide training and research services.

“The program is operated jointly by the Department of Energy and the US Navy. Nuclear reactors provide the Navy with the mobility, flexibility and endurance required to carry out its global mission. More powerful reactors are beginning to be employed on the new Ford class aircraft carriers and will enable the new Columbia class of submarines in the next decades.

“A strong domestic supply chain is needed to provide for nuclear Navy requirements.

“This supply chain has an inherent and very strong overlap with the commercial nuclear energy sector.

“This supply chain for meeting the critical national security need for design and operation of Navy reactors includes a workforce trained in science and engineering, comprised of US citizens who qualify for security clearances.

“The Navy will (also) eventually need additional highly enriched uranium (HEU) to fuel its reactors for long intervals between refueling. Because of the national security use and the sensitivity of HEU production, the entire supply chain from uranium feed to the enrichment technology must be of United States origin.

“There is currently no such domestic capability in the supply chain. The relatively lengthy time period required to stand up such a capability raises serious, near-term concerns about the US capacity to meet this critical national security need.”

The EFI report also states that the companies that supply the shrinking civil nuclear reactor program are the same firms providing components and enriched uranium to keep the Navy’s nuclear-propelled vessels operating. And the report raises concerns about the workforce: “A shrinking commercial enterprise will have long term spillover effects on the Navy supply chain, including by lessened enthusiasm among American citizens to pursue nuclear technology careers.”

Broader connections

The EFI report also discusses civil/military connections beyond the Navy's requirements. For example it states:⁴

"The nuclear weapons stockpile requires a constant source of tritium (half life about 12.5 years), provided by irradiating special fuel rods in one or two commercial power reactors. As with the Navy HEU requirements, the tritium must be supplied from US-origin reactors using domestically produced LEU reactor fuel.

"Once again, we do not have the long-term capability to meet this need because of the absence of an enrichment facility using US-origin technology. This is a glaring hole in the domestic nuclear supply chain, since the only enrichment facility in the United States today uses Urenco (European) technology to supply power reactor fuel."

The report also broadens the workforce argument beyond the Navy, stating that the number people pursuing higher education in nuclear sciences is becoming too small to sustain the nuclear industry and that a nuclear career path will be still less attractive if only military careers were available.

The EFI report concludes that "a stabilized existing reactor fleet and new builds" will be needed to rebuild a supply chain that will underpin national security "success".

Do the arguments withstand scrutiny?

A growing number of nuclear advocates are arguing that a strong civil nuclear industry is required to support the US weapons program – but do their arguments stack up? The short answer is that a strong civil industry helps the weapons program but it isn't essential.

If tritium isn't produced in one particular power reactor, it can be produced in another power reactor, or a research reactor, or a small military reactor could be built or restarted to produce tritium for weapons. As for low-enriched uranium to fuel reactors used to produce tritium, the European consortium Urenco has reportedly approved the use of its enriched uranium to fuel reactors in the US used to produce tritium.⁷

If HEU isn't produced in a dual-use domestic enrichment plant, a dedicated military enrichment plant will do the job (and could be built with or without the support of a civil enrichment industry), or HEU can be sourced elsewhere (e.g. from dismantled weapons).

It helps the weapons program to have a pool of trained personnel in the civil sector to draw from – but it isn't essential.

Of course, this discussion assumes that maintaining the US nuclear weapons program is a good thing – which is a strongly contested assumption. If the aim is to comply with the nation's obligation under the Nuclear Non-Proliferation Treaty to seriously pursue disarmament, the decline of the civil nuclear industry would dovetail neatly with the NPT obligation to pursue disarmament.

And of course, this refreshing honesty about the connections between the peaceful nuclear industry and Weapons of Mass Destruction might backfire. Opponents of nuclear power in the US (and comparable countries) might redouble their efforts, secure in the knowledge that

anti-nuclear power campaigning also serves to undermine the WMD program to a greater or lesser extent.

Politics

Perhaps some of those arguing that a strong civil nuclear industry is needed to maintain the US weapons program don't really believe the argument stacks up, or they don't care one way or another – for them the test is whether the argument might be accepted by people with power and influence within the Trump administration.

Trump is certainly an advocate of expanding the nuclear weapons program. But his comments linking civil and military nuclear programs have been so convoluted that it would take an oracle (or a Fox or a Breitbart) to decipher them. He famously said in February 2017: "You know what uranium is, right? It's a thing called nuclear weapons and other things. Like lots of things are done with uranium, including some bad things."⁸ And in the same month he said: "I am the first one that would like to see everybody nobody have nukes, but we're never going to fall behind any country even if it's a friendly country, we're never going to fall behind on nuclear power. It would be wonderful, a dream would be that no country would have nukes, but if countries are going to have nukes, we're going to be at the top of the pack."⁹

At the Future of Energy summit in April 2017, Energy Secretary Rick Perry joined the dots more clearly: "As we have not built nuclear plants over a 30-year time, the intellectual capability, the manufacturing capability, I will not say has been completely lost, but has been impacted in a major way. In doing so, the development of our weapons side has been impacted."¹⁰

Perry continued: "There is a conversation, there is a discussion – some of it obviously very classified – that will be occurring as we going forward to make sure that we have the decisions, made by Congress in a lot of these cases, to protect the security interests of America ..."¹⁰

The Trump administration is probably sympathetic to the argument that the civil nuclear industry needs extra support in order to prop up the weapons programs. The administration might, in time, give the industry what it wants – but it has done little to date. A request for a non-repayable handout of US\$1–3 billion to help keep the VC Summer reactor project in South Carolina alive was rejected and the project was abandoned shortly thereafter.¹¹ The administration has proposed cutting nuclear power R&D funding and killing off the loan guarantee program (which would jeopardize the only nuclear new-build program in the US – the Vogtle project in Georgia).¹² In June, the administration barred 27 Department of Energy scientists from attending an IAEA conference in Russia on fast neutron reactors.¹³ One scientist offered to pay his own way and was still barred from attending.

The Trump administration might be more receptive to libertarian conservatives such as those arguing that favoring nuclear power with heavy subsidies "increases costs to electricity users, and discourages the development of new energy technologies" and that nuclear subsidies "reward poor management and bad judgment and would cost homeowners and businesses billions."¹⁴

Matt Kempner, a journalist with *Atlanta Journal-Constitution*, wrote on August 28:¹⁵

“There’s a mad scramble underway to come up with new reasons for why Georgians should continue to pay billions of dollars to expand nuclear power in the state. National security! Push back against Russia and China! ... Seriously? ... It seemed like only yesterday when Georgia Power convinced politicians on the Georgia Public Service Commission that a primary reason for expanding Plant Vogtle was because it was the cheapest way to cool our homes, charge our iPhones and keep industry chugging. Proponents can no longer say that without twitching. ...

“You might wonder why Georgia ratepayers should pay the bulk of supposedly preserving national security rather than having the federal government do so. Well, there hasn’t been a Washington groundswell to write a blank check that takes most of the nuclear burden off our backs. Maybe they aren’t fully convinced by the “national security” argument. ...

“Bobby Baker, a former PSC commissioner, says he doesn’t remember the national security argument or fear of Russian or Chinese dominance being raised as issues when PSC commissioners were asked to approve the Vogtle expansion back in the day, when U.S. utilities were already decades into a deep freeze on nuclear construction. Baker called it a “creative” argument.”

Kempner also questions Georgia Public Service Commissioner Tim Echols’ claim that the lack of a commercial nuclear industry to provide employment and training would have an adverse impact on the Navy:¹⁵

“Actually, a lot of the time it’s the other way around: Utilities often hire Navy-trained nuclear personnel. I asked the Naval Nuclear Propulsion Program about how crucial the commercial nuclear industry is for the Navy. “The direct relationship between civilian and naval nuclear reactors is small,” public affairs director Lee Smith emailed me. But some components are supplied by the same companies, “providing some economy of scale for the manufacturer and reduced costs for the Navy.””

UK debates

The UK’s nuclear power industry is closer to extinction than the US industry. The US has 99 operable power reactors, a large majority of them 30+ years old. The UK has 15 power reactors, most of them 30+ years old.

The power/weapons arguments are also starting to surface in the UK. Paul Brown wrote in *Climate News Network* on August 23:¹⁶

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“Britain decided in 2002 after an objective inquiry¹⁷ by the government’s Performance and Innovation Unit (PIU) that nuclear was becoming too expensive and renewables were a better alternative for generating electricity.

“However, quite unexpectedly, in 2005, after a secretive review under the premiership of Tony Blair, the policy was reversed and the UK government announced a revival of the nuclear industry.¹⁸

“Corresponding with this unprecedented U-turn on civil nuclear power was an equally unprecedented intensification in efforts to preserve nuclear skills for the military sector. Many millions of pounds have been given in government grants since that time to set up nuclear training programmes.

“The Oxford Research Group (ORG), a UK think tank, published a two-part report, entitled Sustainable Security.^{19,20} Both parts examined the prospects of the UK’s Trident nuclear programme influencing its energy policy.

“The ORG concluded that the government realised it could not sustain its own nuclear weapons programme, or more particularly its nuclear-propelled submarine fleet, without a large and complementary civilian nuclear industry.

“Commenting on the release of the American report on the military crisis being caused by the lack of civilian power projects, Andrew Stirling, professor of science and technology policy at the School of Business, University of Sussex, UK, said: ‘With renewable costs tumbling and the international nuclear industry in growing crisis, it is becoming ever more difficult to carry on concealing this key underlying military reason for attachment to civil nuclear power.’

“In the last year the UK government has been trying to generate interest in an alternative civilian nuclear programme. It has encouraged a competition to develop small modular reactors.²¹

“These reactors are supposed to be dotted around the countryside to power small towns. There are a number of designs, but some are remarkably similar to the power generators for nuclear submarines, particularly those that will be needed for the UK’s so-called independent nuclear deterrent – the Trident programme.

“It is no coincidence that the frontline developer of both these kinds of reactors is Rolls-Royce, which has a workforce that seamlessly crosses over between military and civilian developments.”

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Does the US need a strong nuclear industry to prevent proliferation abroad?

Author: Jim Green – Nuclear Monitor editor

NM850.4678 The argument that a strong civil nuclear industry is needed to maintain the US weapons program is exaggerated and problematic, as is another argument being put forward to bolster the case for expanded government support for the nuclear industry. This is the argument that the US must be heavily involved in the global nuclear industry to prevent weapons proliferation and to shore up other geopolitical interests.

Historically, the US has variously supported other countries' weapons programs, or turned a blind eye to them, or attempted to prevent those programs with varying success. The US 'Atoms for Peace' program spread dual-use facilities and materials (such as 25 tons of highly-enriched uranium (HEU)¹) across the globe and there are unfinished efforts to undo that damage by transferring fissile material to the US, converting HEU-fuelled reactors to low-enriched uranium fuel, etc.

The administration of George W. Bush invested considerable resources and political capital into opening up civil nuclear trade with India. In so doing it took a sledgehammer to the global non-proliferation architecture, in particular the prohibition on nuclear trade with non-signatories to the Nuclear Non-Proliferation Treaty (NPT). To add insult to injury, the efforts of US firms to build reactors in India have come to nothing – Russia is the only foreign country building reactors in India.

In recent years, the US has done all it can to undermine the Treaty on the Prohibition of Nuclear Weapons, adopted by the UN in early July 2017, and the US boycotted the negotiations. Just in the past week, reports have surfaced that the US warned Sweden that if it signs the UN treaty, bilateral defence cooperation will be hampered and it would jeopardize the possibility of military support from the US in a crisis situation.²

Michael E. Webber, an academic who receives funding from the US government and the power industry, argues that the "loss of expertise from a declining domestic nuclear workforce makes it hard for Americans to conduct the inspections that help keep the world safe from nuclear weapons."³ Webber notes that around 2,500 people, including 200 US citizens, work at the International Atomic Energy Agency (IAEA)⁴ – but he fails to note that only 385 of the IAEA's staff members are safeguards inspectors, and that inspectors come from around 80 countries.⁵ His argument might carry a little more weight in relation to the Defense Threat Reduction Agency, a US agency concerned with chemical, biological, radiological and nuclear weapons.

Geopolitical interests

Mark Hibbs from the Carnegie Endowment for International Peace has written an article⁶ which has been enthusiastically endorsed by the World Nuclear Association⁷, the Nuclear Energy Institute⁸ and other nuclear advocates.⁹

Hibbs argues that US nuclear firms are at a competitive disadvantage compared to Russian and Chinese state-owned enterprises. That argument dovetails neatly with industry calls for direct state funding to build nuclear power plants since private firms can't or won't cover the capital costs. Commenting on Hibbs' article, Ted Jones from the Nuclear Energy Institute said: "The US nuclear industry has been competing not just against foreign companies but also against their governments – which seek the unique strategic benefits of a nuclear energy supplier. For our nation, much more is at stake than billions in US nuclear exports and tens of thousands of American jobs."⁷

Hibbs says nothing about the interlinkages between civil and military nuclear programs in the US or the possibility

that the weapons program will be adversely affected by a sustained downturn in nuclear power. He argues that US capacity to constrain weapons proliferation will be adversely impacted by the domestic downturn of nuclear power and by the waning prospects for US nuclear exports (greatly diminished by Westinghouse's bankruptcy filing).

Hibbs also argues that historically the US nuclear export program has facilitated "strategic trade penetration". He states that the Atoms for Peace program "was designed to expand U.S. influence during the Cold War, and it succeeded" – but he fails to note that the Atoms for Peace program also spread dual-use nuclear facilities and materials across the globe.

Hibbs makes the exaggerated claim that the nuclear export programs of Russia and China give them "access to strategic decisionmaking" in dozens of countries "concerning technology, energy, and foreign policy for decades to come".

Hibbs states that the US and other established nuclear-technology-owning countries "made the rules for nuclear exporting, nonproliferation, nuclear security, and business transparency" and problems loom if that leadership is ceded to Russia and China. He cites allegations of Russian cyberattacks against nuclear power targets and alleged Chinese economic espionage against Westinghouse.

Hibbs questions whether Russia and China have strictly adhered to the Nuclear Suppliers Group's guidelines

concerning their exports to India and Pakistan, respectively. But he doesn't mention that the US took an axe to the global non-proliferation architecture with the US–India deal. And he doesn't mention that the US is now trying to undermine the Nuclear Suppliers Group by pressuring it to include India despite India's expansive program to expand its nuclear weapons and missile arsenal and its dodgy record in relation to nuclear exports.¹⁰

Hibbs notes that China's support for international efforts to rein in North Korea's "dangerous" nuclear weapons program has been limited and conditional upon other Chinese strategic interests. But the same could be said of US approaches to other countries' nuclear weapons programs (those of India and Israel, for example). And are we to believe that the only "dangerous" nuclear weapons program is North Korea's?

Although Hibbs' article says everything the US nuclear industry wants to hear – and nothing it doesn't want to hear – he is short on suggestions. Other than proposing "better use of the U.S. Export-Import Bank", all he proposes is a "structured conversation" between government and industry about steps that could be taken to enhance US nuclear exports and encourage a "level international playing field" for exporting nuclear technology.

Hibbs' article is dangerous, irresponsible propaganda and it undermines the credibility of the Carnegie Endowment for International Peace.

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Fukushima Fallout: Updates from Japan

Cabinet accepts nuclear policy guidance document

Decommissioning plans for Tokai Reprocessing Plant Rokkasho Reprocessing Plant

Japan's intentional plutonium surplus

Slow progress on high-level waste disposal

Trial begins for children of Hibakusha First court day of TEPCO executives criminal trial

More Fukushima law suits

Mental health afflictions for Fukushima first responders

Radioactive particles in northern Japan

Japan rates severity of Oarai nuclear exposure accident as level 2

Cabinet accepts nuclear policy guidance document

NM850.4679 Japan's cabinet approved a draft Basic Concept on Nuclear Energy Use developed by the Japan Atomic Energy Commission (JAEC) in mid-July.¹ The policy derives from expert consultations stretching back two years, and a public consultation phase earlier this year which resulted in 728 comments.¹ The draft Basic Concept describes "the need to use nuclear energy in an appropriate manner by thoroughly managing risk under a responsible system", according to the Japan Atomic Industrial Forum.¹

The process was a sham. A JAEC committee met on 18 July to discuss the public 728 comments, completed the draft Basic Concept on July 20, and Cabinet approved it the following day.

Meanwhile, the industry ministry has opened discussions on a review of Japan's Strategic Energy Plan.² And again, it seems the outcome has been predetermined. Industry minister Hiroshige Seko said the plan will remain basically unchanged.² An overwhelming majority of the members of two bodies considering the Strategic Energy Plan are supportive of current government policy whereas advocates of a shift away from nuclear power and of intensive development of renewable energy account for "a mere handful of their members" according to a recent *Asahi Shimbun* editorial.²

The current Strategic Energy Plan, approved by the Cabinet in 2014, contains a "deceptive aspect", the *Asahi Shimbun* editorial noted – the plan says that "Japan will minimize its dependency on nuclear power" but it also defines nuclear power as an "important base-load power source."² The Abe government is doing its best to promote nuclear power, not to minimize its use.

The Long-Term Energy Supply and Demand Outlook, a document produced by the industry ministry in 2015, is more openly pro-nuclear and assumes that nuclear power will account for about 20–22% percent of Japan's total electricity supply by 2030.² That figure translates to around 30 operating reactors.

Only five power reactors are currently operating – Sendai 1 and 2, Takahama 3 and 4, and Ikata 3.³ Another five will restart by March 2019 according to the latest estimate by Japan's Institute of Energy Economics.³ The Institute has dramatically lowered its expectations for reactor restarts: in its previous outlook, it anticipated that 19 reactors would be operating by March 2018.³

The 20–22% target by 2030 may not be attainable, no matter how hard the government pushes.

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Decommissioning plans for Tokai Reprocessing Plant

The Japan Atomic Energy Agency applied to the Nuclear Regulation Authority on June 30 for approval of its plans for decommissioning the Tokai Reprocessing Plant. The plant is located in Tokai Village, Ibaraki Prefecture. It was test operated in 1977, and began full operation in 1981, but its utilization rate stagnated. It processed a total of 1,140 tons of spent nuclear fuel (equal to 5.4 years of its claimed processing capacity). The decision to decommission the plant was made in 2014.

The decommissioning will take about 70 years to complete, at a total cost of about ¥1 trillion (US\$9.1 billion; €7.8 billion) plus additional costs for waste disposal. That is over five times the cost of its construction, which was about ¥190 billion.

Furthermore, the vitrification of high-level wastes has continued to be fraught with problems, resulting in delays. In addition, the plant is storing 265 spent fuel assemblies from the Fugen Prototype Advanced Thermal Reactor in a pool. Those are to be shipped to France, but that has yet to be actualized.

Citizens Nuclear Information Center, July/August 2017, Nuke Info Tokyo No. 179, www.cnic.jp/english/?p=3903

Rokkasho Reprocessing Plant

The 800 tons/year Rokkasho reprocessing plant has been repeatedly delayed and cost estimates have been repeatedly revised upwards. Currently, the cost estimate is ¥2.94 trillion (US\$26.8 billion; €22.8 billion) and start-up is anticipated in 2018.

World Nuclear Association, 31 July 2017, 'Japan's Nuclear Fuel Cycle', www.world-nuclear.org/information-library/country-profiles/countries-g-n/japan-nuclear-fuel-cycle.aspx

Japan's intentional plutonium surplus

Alan J. Kuperman – associate professor and coordinator of the Nuclear Proliferation Prevention Project (www.NPPP.org) at the University of Texas, Austin – writes in an opinion piece published by *Kyodo News*:

"Japan owns nearly 50 tons of separated plutonium. That is enough for over 5,000 nuclear weapons. Yet Japan has no feasible peaceful use for most of this material. This raises an obvious question: How did a country that forswears nuclear arms come to possess more weapons-usable plutonium than most countries that do have nuclear arsenals?"

"Some argue it is the unforeseen consequence of unexpected events, such as the failure of Japan's experimental Monju breeder reactor, or the Fukushima accident that compelled Japan to shut down traditional nuclear power plants. ...

"But that is false. Japan's massive accumulation of nuclear weapons-usable plutonium was foreseen three decades ago. In testimony submitted to the U.S. Congress in March 1988, and published that year,

Dr. Milton Hoenig of the Nuclear Control Institute – where I worked at the time – documented how Japan’s planned separation of plutonium from spent fuel greatly exceeded its planned recycling of such plutonium in fresh fuel. The inevitable result, he predicted, was that Japan would accumulate enormous amounts of separated plutonium. ...

“The hard truth is that creation of a plutonium surplus was not an accident but the inevitable consequence of Japanese nuclear policy that the U.S. government acquiesced to in 1988. Why did Japan intentionally acquire a stockpile of plutonium sufficient for thousands of nuclear weapons? Neighboring countries suspect it is to provide Japan the option of quickly assembling a large nuclear arsenal. Not surprisingly, both China and South Korea are now pursuing options to separate more plutonium from their own spent nuclear fuel.

“Three urgent steps are necessary to avert this latent regional arms race. First, Japan should terminate its Rokkasho plant, which is an economic, environmental, and security disaster. The last thing Japan needs is more surplus plutonium. Second, the United States and Japan should seize the opportunity of their expiring 1988 deal to renegotiate new terms restricting plutonium separation, which could also serve as a model for ongoing U.S.-South Korea nuclear negotiations.

“Finally, innovative thinking is needed to shrink Japan’s plutonium stockpile. In light of the worldwide failure of breeder reactors, and post-Fukushima constraints on traditional reactors, most of Japan’s plutonium will never become fuel. Instead, it should be disposed of as waste. The U.S. government has recently made a similar decision, abandoning plans to use recovered weapons plutonium in fuel and instead intending to bury it. U.S.-Japan collaboration to dispose of surplus plutonium in a safe, secure and economical manner could help make up for the misguided bilateral decisions that created this problem 30 years ago.”

Alan J. Kuperman, 17 Aug 2017, ‘Opinion: Japan’s intentional plutonium surplus’, <https://english.kyodonews.net/news/2017/08/39a5a7121fcf-opinion-japans-intentional-plutonium-surplus.html>

Slow progress on high-level waste disposal

On 28 July 2017, the Nuclear Waste Management Organization of Japan (NUMO) published a ‘Nationwide Map of Scientific Features for Geological Disposal’ of high-level nuclear waste, categorizing all areas in Japan into four categories: (1) areas with unfavorable geological features such as volcanoes and active geological faults, (2) unfavorable areas endowed with natural resources, (3) areas with a good chance of having favorable characteristics and (4) areas with a good chance of having favorable characteristics and also favorable from the viewpoint of transportation.¹

Areas that might be suitable account for roughly 65% percent of the nation’s land and cover more than 80% of the nation’s 1,800 municipalities. Areas that might be suitable and also lie within 20 km from a coastline (thus facilitating transportation) cover 30% percent of Japan’s land and about 900 municipalities.²

Atomic Resting Place
Japan’s map of suitable areas for final disposal of high-level nuclear waste



NUMO said that publication of the map is the “first step on the long road toward the decision of the site.”¹ NUMO expects site selection from about 2025, with repository operation from about 2035.³ Of course, that timeline is unrealistic. *Japan Times* suggested a timeframe of 50 years and said that the METI bureaucrats and nuclear industry executives will be long dead before the project reaches fruition.⁴

Getting local governments to offer land for disposal sites is going to be “very difficult” as *Japan Times* noted, even though participation comes with rewards: ¥2 billion for an initial two-year data study and ¥7 billion for a follow-up study.⁴ Previous attempts to bribe local communities to offer land for evaluation for a dump failed – one mayor expressed interest in 2007, and was removed from office in the next election.⁵

The total cost of the waste repository project is estimated at approximately ¥3.7 trillion (US\$34 bn; €28.5 bn), excluding financial compensation paid to local communities.^{3,6} This will be met by funds accumulated at 0.2 yen/kWh from electricity utilities and paid to NUMO, *World Nuclear News* reported.³ But by 2015, only ¥1 trillion had been collected – a little more than a quarter of the estimated requirement.³

There has been little public discussion about what happens to spent nuclear fuel if reprocessing is abandoned, though a “feasibility study” reportedly began in April 2017.⁵

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Trial begins for children of Hibakusha

The first round of oral proceedings got underway in the Class Action Suit Seeking Assistance for Second Generation Hibakusha (atomic bomb survivors) on May 9 in the Hiroshima District Court and on June 5 in the Nagasaki District Court. The suit, lodged by 47 plaintiffs, seeks a token payment as compensation for mental suffering incurred by second-generation hibakusha. This sum is not intended as compensation for damages, but to make it clear to society through the lawsuit that the problem exists. There are 300,000 to 500,000 second-generation hibakusha living throughout Japan, and they have to live with uncertainty over the genetic effects of atomic bomb radiation. In the first round of oral proceedings in both district courts, the plaintiffs described their health concerns and actual health damage, seeking a ruling that would lead to legal assistance, while the state sought to have their request dismissed.

Citizens Nuclear Information Center, July/August 2017, *Nuke Info Tokyo No. 179*, www.cnic.jp/english/?p=3903

First court day of TEPCO executives criminal trial

The first day of the court case against former TEPCO executives Tsunehisa Katsumata, Ichiro Takekuro and Sakae Muto for professional negligence leading to fatalities was held on 30 June 2017 in Tokyo District Court.

Prosecutors had twice decided against charges against any TEPCO executives but a citizen's panel – which has the power to review judicial decisions – overturned the decision and charges were laid early last year.

Prosecutors will argue that before the March 2011 Fukushima disaster, the executives had seen internal reports and simulations warning of the risk of a major earthquake in the region triggering a massive tsunami.

Kazuki Homori, lawyer for the Fukushima plaintiffs, said: "Through this trial, several of TEPCO's internal documents regarding tsunami countermeasures that had not been released before will be made public. It is amazing and disgraceful that while so much important evidence on TEPCO's tsunami countermeasures exists and moreover that they agreed to have it examined at a criminal trial, this evidence has thus far been hidden at all costs from civil trials."

He said the "future direction of this trial will be noteworthy if only as an important case regarding how the judiciary can fulfil its function of acting as a restraining influence on the national government's pro-nuclear policies."

Kazuki Homori, July/August 2017, 'First court day of TEPCO executives criminal trial', *Nuke Info Tokyo No.*



Rally on the first day of the trial of TEPCO executives, outside the Tokyo District Court, June 30. From left: Kazuyoshi Sato, head of the trial support group, Ruiko Muto, chair of the Fukushima Nuclear Disaster Plaintiffs, and other plaintiffs.

179, www.cnic.jp/english/?p=3907

Rachel Mealey, 30 June 2017, 'Former TEPCO bosses to face trial over deadly Fukushima nuclear disaster', www.abc.net.au/news/2017-06-30/former-executives-face-court-as-fukushima-disaster-trial-begins/8664712

More Fukushima law suits

TEPCO said on 24 August 2017 that it has been sued by 157 individuals in a court in the US for US\$5 billion in damages over the 2011 Fukushima nuclear disaster.¹ The plaintiffs include crew members on board the USS Ronald Reagan during the 2011 disaster. The suit, filed on August 18 with the Southern District Court in California, was the second one lodged in the US following a similar suit filed in 2013 which currently has 239 registered plaintiffs.

As reported in Nuclear Monitor #840, a local court in central Japan ruled in March 2017 that the Japanese government and TEPCO were liable for negligence in the Fukushima disaster and shall pay a total of ¥38.6m (US\$351,000) to 62 Fukushima evacuees.² The court ruling sets an important precedent. It is the first of about 30 lawsuits to be brought by almost 12,000 Fukushima evacuees in 18 prefectures.

1. Xinhua, 24 Aug 2017, 'Japan's TEPCO sued by U.S. residents over Fukushima nuclear disaster', http://news.xinhuanet.com/english/2017-08/24/c_136552546.htm
2. Nuclear Monitor #840, 21 March 2017, 'One step forward, one step back for Fukushima evacuees', www.wiseinternational.org/nuclear-monitor/840/one-step-forward-one-step-back-fukushima-evacuees

Mental health afflictions for Fukushima first responders

Japan Times on 2 September 2017 published a detailed report on the mental health problems facing first responders to the March 2011 Fukushima disaster. A study of some 1,500 workers found that all had experienced a variety of stressors relating to their direct experiences of the disasters, losses of loved ones and the backlash from a disgruntled public, in particular from the 160,000 Fukushima evacuees (reflecting a tendency

in Japan to associate both CEOs and their foot soldiers alike with the company they work for, making them collectively responsible).

According to the study's lead researcher Jun Shigemura, 29.5% of workers at the Fukushima plant subsequently displayed symptoms of high post-traumatic stress responses, including flashbacks and avoidance of reminders of the events they went through.

If the Chernobyl experience is repeated, mental health problems will afflict Fukushima first responders for decades to come. Studies have shown that mental health problems, including post-traumatic stress disorder, depression and suicide ideation, were still high and remained the most prevalent problem for the Chernobyl cleanup workers even 20 years after the disaster. "So I think we can say with some confidence that the Fukushima workers also carry a very high risk of developing long-term mental health issues," Shigemura said.

Fukushima plant worker stressors:

Work-related experience:

- Earthquakes and tsunami
- Plant explosions
- Radiation exposure
- Extreme overwork
- Worker shortage

Survivor experience:

- Mandatory evacuation
- Property loss
- Family dispersion

Grief — loss of:

- Colleagues
- Family members
- Friends

Social backlash:

- Public criticism
- Discrimination
- Harassment
- Guilt as "perpetrators" of a nuclear accident

Rob Gilhooly, 2 Sept 2017, 'Battling nuclear demons: Mental health issues haunt those who were the first line of defense after 3/11', www.japantimes.co.jp/news/2017/09/02/national/science-health/battling-nuclear-demons-mental-health-issues-haunt-first-line-defense-311/

Radioactive particles in northern Japan

The scientific journal *Science of the Total Environment* has published a peer-reviewed article entitled co-authored by Dr. Marco Kalfoten, Worcester Polytechnic Institute (WPI), and Arnie Gundersen, Fairewinds Energy Education. The article details the analysis of radioactively hot particles collected in Japan following the Fukushima Daiichi meltdowns. Based on 415 samples of radioactive dust from Japan, the US, and Canada, the study identified a statistically meaningful number of samples that were considerably more radioactive than current radiation models anticipated. If ingested, these more radioactive particles increase the risk of suffering future health problems.

Fairewinds, 27 July 2017, www.fairewinds.org/newsletter-archive//press-release-radioactively-hot-particles-in-japan

Japan rates severity of Oarai nuclear exposure accident as INES Level 2

Japan's Nuclear Regulation Authority has provisionally assessed the severity of a 6 June 2017 accident as level 2 on the zero-to-seven International Nuclear Events Scale.^{1,2} The accident at the Japan Atomic Energy Agency's (JAEA) Oarai Research and Development Center in Ibaraki Prefecture left five workers internally exposed to radiation.

On June 6, a worker opened a container in a storage room at the facility and a plastic bag inside the container ruptured, releasing plutonium and uranium powder samples. Tests found small amounts of radioactive materials – plutonium and americium – in the urine of five workers, confirming they suffered internal radiation exposure. It was estimated that one of the workers will be internally exposed to a radiation dose of 100–200 millisieverts over 50 years as a result of the accident¹ – but other reports suggest a far greater dose of 12,000 mSv over 50 years for the most heavily contaminated worker.³

JAEA said the release was of "Pu oxide, U oxide and others used in experiments, etc. for developing fast reactor nuclear fuel".⁴ Curiously, JAEA said it would "like to refrain from public disclosure" of other substances "from the viewpoint of nuclear non-proliferation."⁴

The ruptured container wasn't the only inappropriately stored material. According to information submitted to the Nuclear Regulation Authority by the JAEA Oarai Research and Development Center, nuclear materials cited as being inappropriately stored in cells and gloveboxes etc. comprised 2,207 samples – some stored for several decades.⁴

The Citizens Nuclear Information Center said:⁴

"An important reason for the implementation of this task is found in the problems uncovered for the first time by a safety inspection last year. In the safety inspection carried out with respect to JAEA's Nuclear Science Research Institute (Tokai Village) in the third quarter of fiscal year 2016, it was discovered that, in violation of classifications provided in the safety regulations, nuclear fuel materials had been cited as being "in use" and stored in cells and gloveboxes for long periods of time.

"As a result, NRA instigated checks through safety inspections on the possibility that there might be similar violations at other nuclear-related facilities, including other JAEA facilities. According to NRA materials of February 2017, a total of ten facilities engaging in reprocessing, processing and use of nuclear fuels had been carrying out inappropriate long-term storage of nuclear fuel materials ..."

"This inappropriate long-term storage problem clearly shows, if one looks back at the historical series of organizations – the Nuclear Safety Commission, the Nuclear and Industrial Safety Agency and the NRA, that for 30 years or more none of these organizations made any public announcements on the issue, or knew what was happening and simply turned a blind eye. The regulatory organizations' neglect thus far and the defensive awareness that they do not want this to be

aired in public has undoubtedly been one of the remote causes of the accident at Oarai.”

Japan Times listed some other accidents:³

- March 1997: Radioactive material leaked after a fire and explosion at the Ibaraki branch of now-defunct Power Reactor and Nuclear Fuel Development Corp., later absorbed by Japan Atomic Energy Agency. Thirty-seven employees were exposed.
- September 1999: A self-sustaining chain reaction was triggered by the use of mixing buckets at uranium processing firm JCO Co. in the village of Tokai, Ibaraki Prefecture. The accident eventually killed two of three exposed employees, after tainting more than 600 residents.
- June 2006: A suspected case of plutonium inhalation occurred at Japan Nuclear Fuel's reprocessing plant in the village of Rokkasho, Aomori Prefecture, but a check for internal exposure turns out negative.
- July 2008: A worker at Global Nuclear Fuel Japan Co. was exposed to uranium in Yokosuka, Kanagawa Prefecture, followed by the exposure of four workers to a uranium-tainted liquid a month later.

- March 2011: Three workers stepped into a puddle during the meltdown crisis at the Fukushima No. 1 power plant, exposing two to high radiation doses.
- May 2013: Thirty-four researchers at JAEA's Japan Proton Accelerator Research Complex in Tokai were exposed to an exotic soup of isotopes during an experiment.

1. 2 Aug 2017, 'Japan rates severity of June nuclear exposure accident as level 2', <https://mainichi.jp/english/articles/20170802/p2g/00m/0dm/059000c>
2. Ed Lyman, 9 June 2017, 'Increase in Cancer Risk for Japanese Workers Accidentally Exposed to Plutonium', <http://allthingsnuclear.org/elyman/cancer-risk-for-japanese-exposed-to-plutonium>
3. 8 June 2017, 'Ibaraki plutonium exposures baffle Japanese nuclear experts', www.japantimes.co.jp/news/2017/06/08/national/ibaraki-plutonium-exposures-baffle-japanese-nuclear-experts/#.WUdKauk3U1I
4. CNIC, July/August 2017, 'Disturbing Plutonium Exposure Accident', Nuke Info Tokyo No. 179, www.cnic.jp/english/?p=3910

NUCLEAR NEWS

German city of Aachen begins distributing iodine tablets

The western German city of Aachen has started issuing free iodine tablets to around 500,000 people because of the risks posed by Belgium's Tihange nuclear power plant, 70 km away.^{1,2} People can register on the city website to receive coupons exchangeable at pharmacies stocking the pills. Each person can get a blister pack of six pills.

The plan is for people at risk in the event of an accident to have a supply to avoid the difficulty of distributing iodine tablets after an accident has occurred, and because iodine is most effective if consumed in the hours before exposure to radioactive iodine.⁴ Aachen city spokesperson Markus Kremer said: "In everything we've done so far, we've tried to find a sensible way of communicating the necessary information. On the one hand, there is absolutely no point in people panicking, but we also don't want to downplay the risks."

There has been ongoing controversy over the safety of Belgium's reactors – in particular Doel-3 and Tihange-2 – including strenuous efforts by politicians and the public in neighboring countries to force the closure of the reactors.

In April 2016, Belgium's Health Minister Maggie De Block said that iodine pills will be supplied to all Belgians within a 100 km radius of a nuclear power plant – all or almost all of Belgium's entire population of 11 million people.³

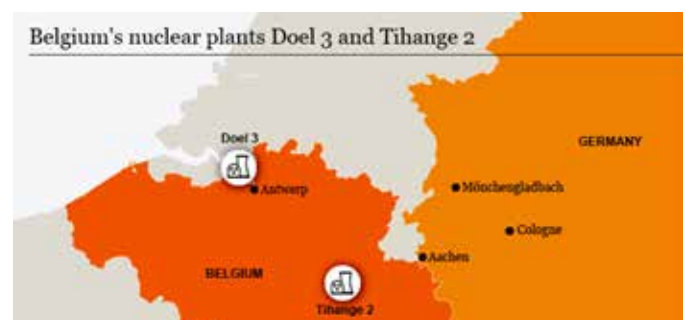
"We are a very small and densely populated country surrounded by nuclear power plants both in our country and neighboring countries" and iodine pills are "cheap and efficient", said Nele Scheerlinck, a spokesperson for Belgium's Federal Authority for Nuclear Control.

Following the Belgium government's April 2016 decision, the German state of North Rhine Westphalia (which

includes Aachen) also decided to make iodine tablets available to its citizens.⁴

Belgium plans to shut down its seven power reactors by the end of 2025.

1. BBC, 1 Sept 2017, 'Germans in Aachen get free iodine amid Belgium nuclear fears', www.bbc.com/news/world-europe-41121761
2. Rebecca Joseph, 1 Sept 2017, 'German city hands out iodine pills to prevent cancer in preparation for a nuclear disaster', <http://globalnews.ca/news/3714212/german-iodine-pills-nuclear-disaster/>
3. Nuclear Monitor #823, 4 May 2016, 'All Belgians likely to be issued with iodine tablets', www.wiseinternational.org/nuclear-monitor/823/nuclear-news-nuclear-monitor-823-4-may-2016
4. Kate Brady, 24 May 2017, 'North Rhine-Westphalia prepares for Belgium nuclear accident with iodine tablets', www.dw.com/en/north-rhine-westphalia-prepares-for-belgium-nuclear-accident-with-iodine-tablets/a-19279950



Jaitapur says a resounding ‘Nako’ (No!) to French nuclear project

20 August 2017 – Thousands of men, women, and children from the farming, agro-trading, and fishing communities of Jaitapur in India’s picturesque Ratnagiri District in Maharashtra, today courted arrest *en-masse*, after a march from Sakhri Nate to Madban village – the site of the upcoming Jaitapur Nuclear Power Park (slated to be the world’s largest such nuclear power facility) – in the presence of heavily-armed state police personnel.

Today’s massive and entirely peaceful protest against the setting up of the Nuclear Power Plant in this ecologically-rich but fragile zone, is of a piece with several such protests and jail-bhara campaigns which have been organized by these local communities in previous years.

Speaking to *DiaNuke.org*, Satyajit Chavan, young leader of the local community’s protest group Jan Hakka Seva Samiti said – “it is shocking that the police used drones, hovering over the entire route of the demonstration and over our protest meeting, for the first time in our thoroughly peaceful protest that has been ongoing for years now. It is clearly a way for the state to project its power and intimidate people’s struggles. It is unfortunate that the right of collective and democratic movement enshrined in our constitution is being undermined so brazenly.”

Read the full article at *DiaNuke*: ‘Jaitapur says a Resounding ‘Nako’ (No!) to French Nuclear Project’, 20 Aug 2017, www.dianuke.org/pictures-jaitapur-says-resounding-nako-no-french-nuclear-project/

See also:

Dianuke, 19 Aug 2017, ‘In India’s Jaitapur, Massive Protest This Weekend Against World’s Largest Nuclear Plant Under Construction’, www.dianuke.org/india-jaitapur-massive-protest-weekend-worlds-largest-nuclear-plant-construction/

Kumar Sundaram, 29 Jan 2016, ‘France Peddles Unsafe Nuclear Reactors to India, Drawing Protest’, www.truth-out.org/news/item/34627-france-peddles-unsafe-nuclear-reactors-to-india-drawing-protest

Cameco settles US tax dispute

Canada’s Cameco Corp. said on July 27 it had settled a US tax dispute for a fraction of the original claim. Cameco will pay the US Internal Revenue Service US\$122,000, compared with the US\$122 million the IRS claimed Cameco underpaid.

Cameco’s dispute with tax authorities relates to its offshore marketing structure and transfer pricing. Cameco sells uranium to its marketing subsidiary in Switzerland, which re-sells it to buyers, incurring less tax than the company would through its Canadian office. Cameco says it has a marketing subsidiary in Switzerland because most of its customers are located outside Canada.

Cameco remains in dispute with the Canada Revenue Agency and acknowledged on July 27 that the dispute could cost the company US\$1.92 billion.

Rod Nickel and Aparajita Saxena, 28 July 2017, ‘Miner Cameco settles U.S. tax spat, bigger Canada fight looms’, www.reuters.com/article/comeco-results-idUSL1N1K1156

More information: ‘Cameco battling uranium downturn, tax office, TEPCO’, *Nuclear Monitor* #842, 26 April 2017, www.wiseinternational.org/nuclear-monitor/842/comeco-battling-uranium-downturn-tax-office-tepco

WISE/NIRS Nuclear Monitor

The World Information Service on Energy (WISE) was founded in 1978 and is based in Amsterdam, the Netherlands.

The Nuclear Information & Resource Service (NIRS) was set up in the same year and is based in Washington D.C., US.

WISE and NIRS joined forces in the year 2000, creating a worldwide network of information and resource centers for citizens and environmental organizations concerned about nuclear power, radioactive waste, proliferation, uranium, and sustainable energy issues.

The WISE / NIRS Nuclear Monitor publishes information in English 20 times a year. The magazine can be obtained both on paper and as an email (pdf format) version. Old issues are (after 2 months) available through the WISE homepage: www.wiseinternational.org

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