

An Updated Expose of General Atomics & Heathgate Resources¹

by Gavin Mudd

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1 Introduction

The USA-based nuclear and military technology multi-national, General Atomics (GA), has a sordid past and is currently making aggressive plans to expand it's operations in Australia, and thereby act as a catalyst to dramatically expand the nuclear industry in the Asia-Pacific region in the process. GA, privately owned by the Blue family of Texas (who bought GA in 1986), was founded in 1955 to develop peaceful uses for nuclear energy. GA has many subsidiaries all over the world in diverse high technology, space, military and nuclear technology areas. Currently, GA are involved in (among others) :

- Largest fusion research centre in the USA
- advanced electronics & technologies
- Proposed sulphuric acid In Situ Leach uranium mine at Beverley, SA
- major contractor to US Dep. of Defense (18%), Dep. of Energy (45%) & National Science Foundation (8%) (% of GA business - note the 2/3 with Gov't!)
- advanced electronics & technology
- gas-cooled nuclear power reactors
- TRIGA nuclear research reactors
- cryotechnology
- aeronautical technology
- uranium conversion and nuclear fuel services

It is important to understand the history of General Atomics in the broader nuclear industry, including links to weapons programs, as well as their current attempts and programs, to have a crystal clear understanding of why we should be actively opposing this corporate recalcitrant establishing business in Australia and our broad region.

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Current Management	Neal Blue Linden S Blue	Chairman & Chief Executive Officer Vice Chairman	
David Roberts Senior Vice Pres. Adv. Tech. Group	Ed Jones Senior Vice Pres. Admin. Group	Thomas Cassidy, Jr President Aeronauticals Group	David Baldwin Senior Vice Pres. Fusion Group
Karsten Blue President Ganet Services	Max Kemp Senior Vice Pres. Finance	Brian Thurgood President Sorrento Electronics	Linden P Blue Chairman, Management Board, Spezialtechnik Dresden
Walter Simon Senior Vice Pres. Bus. Development	James Graham Senior Vice Pres. Nuclear Fuels	Peter R Taylor Deputy Director San Diego Supercomputer	Keith Johnston General Manager Cryotech Deicing Tech.

¹ NOTE - This is an updated version of the paper prepared for the Nuclear Free Australia Forum, December 1998, organised by the Anti-Uranium Collective, Friends of the Earth (Fitzroy), VIC, Australia.

Current Board of Directors :

- **Neal Blue** - Chairman & CEO, GA
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Neal Blue



Linden Blue

2 The Early Years

General Atomics (GA) was founded in 1955 by Frederic de Hoffman, a former member of the Los Alamos team which constructed the Hiroshima and Nagasaki bombs. It was later acquired by General Dynamics, manufacturers of high-temperature gas-cooled (HTGR) reactors, nuclear fuels and nuclear steam systems. General Atomics was bought out by Gulf Oil in 1967 and renamed Gulf General Atomic Ltd. Sometime during the 1970's, Gulf sold half of it's interest in GA to Royal Dutch/Shell, which was only partially bought back in 1979.

During the early 1980's GA activities appeared quite limited as Gulf contended with extended litigation over their involvement in the uranium cartel. The cartel, in which Gulf/GA was a key protagonist, effectively cornered the uranium market between 1972 and 1975, leading to a five-fold increase in the price of uranium. Many utilities sued Gulf and GA, and they in turn sued uranium mining companies, such as United Nuclear Corporation (UNC, whose subsidiary Teton Exploration was one of the original Joint Venture partners behind the 1980's proposal at Honeymoon, SA). The court action lasted several years, and many of the various law suites were eventually settled for tens of millions of dollars.

Summary :	1955-67	General Atomic Division of General Dynamics
	1967-73	Gulf General Atomic
	1974-82	General Atomic Co.
	1982-88	GA Technologies Inc.
	1988-Presently	General Atomics

3 Promoting Research Reactors

GA have designed and delivered research reactors to countries and nuclear programs all over the world - a total of 65 TRIGA (Trainig, Research, Isotopes, General Atomics) research reactors located in 23 countries.

In 1964, they sold Indonesia their first nuclear reactor, a 250 kW TRIGA Mark II, situated at Bandung University. In 1971, the facility was upgraded to 1,000 kW (1 MW). The project was financed by the sale of Sumatran coal, rather ironic given that the nuclear industry promulgate myths about how clean nuclear is compared to dirty coal! In 1980, GA offered to build a 25 MW TRIGA for Indonesia, but it was not built. The GA website lists the maximum power rating of a TRIGA reactor as 16 MW, meaning the reactor they offered to Indonesia would have been the largest ever built and highly experimental, as well on Australia's back door and allow Indonesia a major step forward in their nuclear program and ambitions.

During the 1970's, GA sold a 14 MW reactor to Romania (Potesti One), intended for "research" and training in nuclear technology. This was and still is the largest TRIGA ever built (although the Iranian TRIGA was also large at 5 MW). In 1989, the US Department of Energy (DoE) announced they would be shipping 16.48 kg of highly enriched uranium (93% - weapons grade) to Romania for use in the Potesti reactor. Before his downfall, President Ceausescu of Romania had boasted that his country now had the capacity to manufacture nuclear weapons. The 1989 deal was arranged by Edlow Inc, whose Vice-President Rod Fisk, when asked whether he was concerned how the material would be used, retorted : "That's a question you have to address to the US government". GA refused to acknowledge or address fundamental questions concerning nuclear proliferation, a persistent pattern with their research reactor program.

Another contribution by GA to world peace is the 5 MW nuclear research reactor they sold to Iran in the 1970's. The facility was bombed by Israel in 1982 amid claims and fears of a nuclear weapons program. GA, however, simply list the reactor as "suspended" on their website.

A table of all Research Reactors built or under construction by General Atomics is found at the end of this paper (Appendix One).

4 Nuclear Power Reactors

GA design and construct their own design of large scale nuclear power reactor, the Gas Turbine - Modular Helium Reactor (GT-MHR). The reactor can be operated with uranium or plutonium, and so GA promulgate the myth that it can be used to burn-up military stocks of weapons material. However, the nature of most nuclear reactors is that they generally produce a small amount of plutonium in the fission process. Thus there will always be the risk of proliferation regardless of the original radioactive material used.

In early 1995, GA signed an agreement with the Russian Federation to design and develop a GT-MHR for "destruction" of excess weapons-grade plutonium. The program is being developed as a joint venture with the Russian Ministry of Atomic Energy (MINATOM), Framatome (the French nuclear giant) and Fuji Electric (Japan). Their aim is to design a plutonium-consuming GT-MHR to replace the plutonium producing reactor at Tomsk-7, or other areas of the Russian Federation.

5 Fusion Research

GA have been involved in research on fusion energy for several decades. During the 1980's it was actively developing the Doublet III fusion reactor, with subsidies from the US-DoE and private electric utilities in the USA. The fusion program is still very active (largest in US private industry), although the current funding, corporate partners and subsidy arrangements are not known.

6 Uranium Conversion : The Sequoyah Fuels Facility Saga



GA acquired Sequoyah Fuels Corporation (SFC) from Kerr-McGee in 1988. SFC own and operate a uranium conversion facility in Gore, Oklahoma. It converts yellowcake (U_3O_8) to uranium tetrafluoride (UF_4), which can then be used in enrichment plants and fuel rod fabrication. The facility, which began operation in 1970, used to perform about 70% of the uranium conversion services in the USA. In 1987, the facility began converting depleted uranium hexafluoride (UF_6 , containing about 0.2-0.3% U-235) to uranium tetrafluoride (UF_4 , which can be used for further U-235 enrichment).

The site has consistently been under intense pressure from the United States Nuclear Regulatory Commission (US-NRC), local citizens advocate groups, Native Americans for a Clean Environment (NACE), the Cherokee Nation and environmental groups. There were five NRC-ordered shut downs from 1986 to 1991 alone. The Sequoyah facility contains extensive environmental contamination of both soil and groundwater.

The radiation doses for workers at the site have also been a significant concern.

The area adjacent to the site has 124 noted cases of cancers and birth defects in families, as well as the discovery of a mutant frog with nine legs - with several extra legs over its sternum. Many locals claim these to be related to releases - accidental and otherwise - from the Sequoyah site.

A detailed timeline and recent history of the Sequoyah Fuels Facility saga :

- August 1990 - 10 year licence renewal application. "Extraordinary" level of groundwater contamination discovered from the solvent extraction plant. Investigations begin to assess further environmental and radiological contamination across the entire site.
- November 27, 1990 - NACE file a petition with the NRC against renewal of the Sequoyah licence. NACE argued that the renewal application "contained material false statements because it did not include the groundwater contamination and that the application had included self-inflating phraseology such as they have comprehensively surveyed the site, there is an extensive groundwater monitoring program and phrases like that."
- October 3, 1991 - Order Modifying License required that the licensee remain shut down until it took several actions to improve the staff's confidence in safe operation of the facility. The basis for the order was :
 - 1) failure of certain Sequoyah Fuel managers to follow NRC requirements and conditions of the NRC license;
 - 2) the making of false statements to and withholding information by the licensee from the NRC;
 - 3) the need for improvement in the licensee's Health and Safety and Environmental programs.

- January 3, 1992 - SFC admit two main causes of problems at the site : the failure to instill a strong regulatory safety and regulatory compliance culture; and the second was a lack of a disciplined formal management process. This was exacerbated by the lack of experience of on site managers during 1991, weaknesses in the organisational structure, insufficient sensitivity to the radiological aspects of the facility, and finally inadequate internal communication and with the NRC.
- February 26 - SFC notify the NRC about contamination in the control room - which is supposed to be a clean area - discovered in November 1991, but remained unaltered until the February notification to the NRC. The contamination contained radiation above the regulatory limits.
- March 10, 1992 - NACE and the Cherokee Nation file an application with the U.S. District Court for an order restraining NRC from authorizing restart of the Gore facility.
- March 17, 1992 - NRC hearing on the possible re-start of the Sequoyah facility. The quote from Chairman Selin, is chilling :

“To be absolutely blunt about it, there have been evidence in the past that the production people could overwhelm all of (the) quality people and keep the trucks moving and the production going in spite of violations.”

- March 17, 1992 - NRC commissioners challenge GA for their lack of commitment to decontamination and decommissioning of the Sequoyah site, although GA argued they will address this during continued operation and when the time comes.
- March 17, 1992 - after discussing at length the continued violations of health and safety procedures and whether the new management of the site has permeated through to improve the operational level, NRC commissioners and regional inspection staff agree that the facility is not ready for re-start.
- March 17, 1992 - Quote from the Chief Wilma Mankiller of the Cherokee Nation :

“While General Atomics has responded administratively to your demands for information and requests for management changes, the same demands have been made before with resulting changes only to find that the plant continues to be cited with violations of your regulations upon subsequent inspection. It seems that no matter what is done or promised the violations continue.

Now we learn that there is approximately 20,000 pounds of uranium-contaminated soil beneath the main processing building. We know there are monitoring wells and new ones installed by General Atomics, but what we really do not know is how far the contamination will move and when it will move. We really do not know if there are still other pockets of contamination, their size and the extent to which they may move.

General Atomics is a private for profit company. Presumably the owners have determined that the plant can produce a product sold on the market for profit. They stand anxious to resume the manufacture of this product. However, everyone agrees that this activity should not be allowed unless it can be conducted and is conducted in a completely safe manner. To date, we have no reassurance that after 20 years of failure things will now be different. But perhaps more significantly, should we not now require a new environmental assessment of the already-existing contamination with an eye toward clean-up? Does it not make sense now to require that this be done prior to further engaging in this activity or do we allow restart now and hope that conditions will improve to the extent that this facility will be so profitable to General Atomics that it will have both the desire and the means to completely clean up the environmental contamination that already exists?”

- April, 1992 - NRC authorises restart of the Sequoyah facility.
- May, 1992 - A further incident requiring shutdown of the UF₆ facility.
- November 17, 1992 - at approximately 8:50 am, there was a release of NO_x and nitric acid gas from the digestion area of the UF₆ facility and Sequoyah's management initiated an emergency process shutdown. The release lasted approximately 18 (minutes²). The plume rose rapidly and dispersed as it left the plant site and the event was terminated after about one hour. In looking at the consequences of the release onsite, the control room became infiltrated by some of the NO_x fumes. That required the use of self-contained breathing apparatus in the control room by the operations personnel as they initiated the emergency plant shutdown. A total of 12 employees and 34 local citizens were affected, with a total of 32 requiring medical attention. SFC maintain that there was no release of radioactive material from this event. Some employees were still known to have continuing medical problems one month later, when the event was heard before an NRC board of Inquiry. The resulting plume was visible from the nearby town of Gore, Oklahoma.
- November 23, 1992 - Sequoyah cease all operation of the UF₆ facility. SFC enter into an agreement with competitor Allied Energy Services (operator's of a uranium conversion facility in Illinois), called the ConverDyn Joint Venture. In this way, Allied would perform all conversion services, and SFC would thereby receive fees for remaining shutdown. Despite the continued operation of the Sequoyah facility during 1992, GA and Allied were in secret negotiations as early as July 1992. A stark admission of the future of the Sequoyah facility.
- December 21, 1992 - SFC argue that the cause of the November 17 event was a procedure violation by an operator, which set up a situation such that on the next shift when acid was introduced into a digester, a rapid reaction took place which caused the release of the NO_x gas.
- December 21, 1992 - Yet another quote from Chairman Selin over the Sequoyah saga :

“However, the staff's concerted efforts to translate this apparent commitment into a binding written agreement have been repeatedly frustrated by Sequoyah Fuels and General Atomics, including a letter that we just received this morning. And now, continued productive facility operation, which was promised to be the revenue producer for decommissioning funding, is but ended.

The Commission is quite concerned over the situation. There's a current multi-million dollar decommissioning liability. There is a Commission requirement that once decommissioning starts that it be carried out as promptly as possible. As far as we can see, there's virtually no assurance that the needed funding will be made available on a timely basis.”

- December 21, 1992 - SFC & GA admit it will take at least 12 years to decontaminate and decommission the Sequoyah site.
- December 21, 1992 - Neil Blue, Chairman of GA, argues that “Unfortunately, the new burdens imposed upon Sequoyah's operations by formal and informal regulatory action by the NRC and other agencies had a more severe impact on Sequoyah's ability to operate economically than had been expected.” Neli Blue also presents a letter stating GA's bank would not guarantee GA's financial ability to fund the cleanup of the Sequoyah site.

² - the NRC source document states “18 months”, although this must be a typo, with minutes being correct.

- December 21, 1992 - Chairman Selin disagrees bitterly with Neil Blue :

"First of all, I completely disagree with your characterization of who shot John, you know, why the place closed down, et cetera. I don't think that's all that germane to where we come from here, but I can't just let that stand. It's sort of like driving a car off the cliff and blaming a rigorous application of the law of gravity for the problem of the accident. I think your company steps had led to the regulatory environment which made things so difficult. I don't ask you to agree. It's not really necessary for where we go from here.

The second is that our unhappiness is not to do with the timing of when we learned about the ConverDyn deal. I don't think we would have felt any different in July or August, except we would have understood a little bit better than we did at the time why the negotiations on financial assurances didn't happen. It's the substance of the arrangement. It's not the ConverDyn deal per se, it's the use of that as the basis for financial assurances.

Our regulations, our understanding call for two things. One is a very high assurance that decommissioning will be paid for and even if I don't add any provisos or contingencies to the one you went through, you went through a whole lot if this happens, if that happens, if the deal holds up, if the revenues are in, if the business is there it will produce money, which if we looked at your proprietary figures would tell us that maybe there will be enough money for decommissioning, except we don't know quite how much that is yet. The assurances aren't there and the timing is not there. Our rules call for approval of a decommissioning plan provided that it's responsible, protects the health and safety of the workers and that it's as - well, I could read it, but it says rapid as possible and 12 years is not as rapid as possible. You're clearly proposing a plan that is neither satisfactory assurances, nor is based on a technical or a reasonable rate of spending from the point of view of are we asking to do inefficient things. It's based on an ability of an as yet untested deal to produce the revenues that will allow you to finance the deal, which is completely inconsistent with the sense of our regulations and I think what common sense calls for in a decommissioning."

Third is at one point you laid out your position as an arm's length financial owner but the assurances that you gave and that Mr. Sheppard asked and you agreed on March 17th were clearly a lot more than an arm's length financial. I mean we were given to understand - I specifically asked you and you certainly answered that GA's management resources, its technical resources, its financial resources were behind Sequoyah, that you're not a passive investor that's protected from further commitments by the corporate structure as far as I'm concerned and I'm sure the other Commissioners are concerned.

The fourth point is that the assurances that you gave us on March 17th are a lot more than you seem to recognize today. I have the transcript in front of me. I'm not completely surprised that the conversation took this turn. I asked you, among other things, is GA committed to dealing with the residual magnitude of the problem that has to be faced.

"Yes, we're committed to dealing with the residual when it has to be faced," and there's a long discussion of how you hoped a lot of the remediation will come along the way. But the bottom line was that whether or not the remediation is done under operation, that GA is committed to supporting, financially supporting Sequoyah Fuels when decontamination has to be done.

The last point is the idea that a letter of credit which is useful only if Sequoyah is operating should be used to finance decommissioning is completely inconsistent on itself. You don't decommission when you're operating. You put up the Citicorp letter of credit as a further example of a concrete piece of support that says, "Yes, we have not only our own resources but these financial resources to support decommissioning." And then to say that, "Well, they'll only make the money for decommissioning available as long as we don't have to decommission", i.e. as long as we're still operating, that's just quite internally inconsistent."

- December 21, 1992 - Chairman Selin places GA and SFC on notice.
- February 1993 - Sequoyah Fuels choose to cease all operations and request the NRC to terminate their licence. NRC determine that the licence will remain until the site has been decontaminated and decommissioned.
- October 15, 1993 - NRC hold SFC and GA legally and financially responsible for cleanup of the Sequoyah site.
- July, 1995 - NRC seek to clarify decommissioning funding obligations for the Sequoyah site. GA apparently tried to argue that the Commission's new rule unlawfully imposes "new financial assurance requirements" retroactively.
- August 2, 1996 - NRC and GA agree on \$9 million trust fund for cleanup of the SFC site. NRC were to retract their order against GA
- November 5, 1996 - NRC enforce GA to establish a trust fund of \$9 million for site cleanup. This is despite claims from the State of Oklahoma, NACE and the Cherokee that "the agreement neither meets the financial assurance regulatory requirements for decommissioning nor demonstrates that the public interest objectives of the 1993 Order are met." The State of Oklahoma went even further, stating that "NRC staff have made a 180 degree turn in position, from vigorous pursuit of enforcement to reluctant compromise in the face of a well financed corporate defense."
- October 8, 1997 - NRC court gives final approval to the deal with SFC and GA, rejecting persistent claims by the State of Oklahoma, NACE and the Cherokee that the agreement failed to ensure adequate funds for cleanup to protect the public interest.

The history of GA's involvement with the Sequoyah Fuels Facility is thus one of long and protracted litigation, persistent regulatory violations, lack of financial commitment and ability, disrespect of indigenous owners and citizens in the region, and aggressive legal action concerning the public interest.

7 Uranium Mining

A favourite claim of General Atomics of late is it's expertise and experience in uranium mining, especially concerned with it's alleged ability to develop and operate the **PROPOSED** Beverley ISL uranium mine in South Australia. However, some facts need to be highlighted.

To date, General Atomics have had **NO** direct involvement in the development or operation of any uranium mine - anywhere in the world. The only known involvement of GA is at the Mt Taylor uranium deposit in New Mexico, USA. However, GA sold their interest in this deposit long before any trial or commercial mine began. Mt Taylor is one of the four sacred mountains of the Navajo-Diné. The local community have suffered heavily from historical uranium mining in the region :

"Uranium mining has desecrated not only our Earth, but our traditional cultural lifestyles. It has desecrated the lives of our Navajo - Dine - and Acoma and Laguna people."

Despite this, GA are still promulgating the myth that they own uranium mining and milling operations in Texas and New Mexico. On the Heathgate website (FAQ³), it is claimed that :

"GA has had a long involvement in the nuclear cycle including : mining and processing of uranium"; &

"GA also owns uranium mines and processing facilities in Texas and New Mexico".

The "Corporate Profile" of General Atomics implies that they own Rio Grande Resources Cororation - a known subsidiary of oil giant Chevron Resources. Hardly ownership by GA. According to the "Presentation of General Atomics", GA appear to have owned, operated and are now restoring the Palangana ISL and Panna Maria open cut uranium mines in Texas, as well as the Mt Taylor underground uranium mine in New Mexico.

The Panna Maria uranium mine, among the many uranium and other toxic waste sites spread all across Texas, has created significant opposition and concern from locals over contamination of groundwater and nearby drinking wells, excessive air pollution and an alleged cancer cluster. GA appear to have been called in to help restore the site, although detail is scarce in the public domain.



Panna Maria :
Chevron's 160 acre
Uranium Mill Tailings
Pond

Contents: Six Million
Tons of Radioactive Waste
and Chemical Solvents
(Stewart, 1992)

The Palangana ISL site, as with so many ISL sites across Texas and Wyoming, after several years of pumping and attempting to treat the contaminated groundwater, had it's cleanup standards relaxed for ammonia, molybdenum, radium-226 and alkalinity in June 1995 by the Texas authorities. The Palangana mine was among the first commercial ISL sites in Texas in the late 1970's, and used ammonia-bicarbonate leaching chemistry. The site had severe problems with chemical interference, and perhaps it is no surprise that GA failed in their attempts. Exact details of GA's work unknown.

Apart from the Mt Taylor episode, GA do not have any known history of ownership or any form of involvement in these states. However, GA are known to have a contractual basis for undertaking some remedial works at the former Königstein uranium mine in eastern Germany, near Dresden. This was an underground uranium mine situated adjacent to the mighty Elbe River and close to the Czech border. The mine applied sulphuric acid solutions on a large scale within underground mining stopes as a quasi "solution mining" (or ISL) process. It failed dismally and has simply left massive and recalcitrantly contaminated groundwater behind - GA are supposed to be cleaning it up (while creating a similar mess at Beverley in SA and arguing they don't have to clean it up!).

³ FAQ - Frequently Asked Questions.

GA quietly purchased the Beverley deposit in November 1990 through their Australian subsidiary Heathgate Resources, which GA formed specifically to manage future development of Beverley and any future acquisitions or ventures which they might consider in Australia. GA were prepared to wait until the political climate favoured development and the uranium market was more positive.

They drilled two more bores and conducted more metallurgical studies on the ore body, but upon election of the Howard Coalition to power in March 1996 and the brief resurgence in the spot price of uranium during 1996, GA immediately began development of the Beverley project. Further detailed drilling was undertaken in mid 1996 and early 1997, and by late 1997 approvals were in place for a controversial trial of sulphuric acid In Situ Leach uranium mining.

The trial began on January 2, 1998, and apparently ran until late December 1998. Although Heathgate state in their FAQ that they did NOT discharge any liquid wastes to the Beverley aquifer, the answers by the Environment Minister, Robert Hill, to questions on this issue raised through the Senate Environment Estimates Committee state categorically that liquid waste was discharged.

The current ISL uranium mine trial at Beverley is therefore GA's first ever direct involvement in constructing and operating a uranium mine.

When questioned on their claims of expertise and experience concerning uranium mining (such as the many questions and comments to their recent Environmental Impact Statement (EIS) and *alleged* Supplementary EIS), GA simply argue that :

“Heathgate Resources has employed personnel who have a demonstrated successful record in mining, in uranium mining and ISL uranium mining.”

Thus GA have merely bought “expertise and experience” in personnel, not based on real life!

8 Other Australian Connections

General Atomics have been secretly building strategic alliances to establish a foothold in Australia. Although the attempt to develop the Beverley acidic ISL uranium mine is their main priority, during June 1997 they announced that ANSTO⁴ would be a project partner in the design and construction of a nuclear research reactor and centre in Thailand.

Another link is through ANSTO's proposed replacement research reactor at Lucas Heights in southern Sydney. Although ANSTO have not committed to a specific company or nuclear reactor design, the principles for a new reactor presented in the Research Reactor EIS strongly suggest that ANSTO were considering a General Atomics TRIGA-style reactor. ANSTO list GA as one of eight vendors under consideration for the new reactor on their EIS website.

However, much to the surprise of many in the nuclear industry and the anti-nuclear movement, GA were excluded by ANSTO from the short list of 4 suppliers for the new reactor in January 1999. ANSTO have specified the reactor they want is 14 to 20 MW - perhaps GA's TRIGA reactors just aren't powerful enough for our folks at ANSTO ?

⁴ - ANSTO stands for the Australian Nuclear Science and Technology Organisation. They operate the old HIFAR nuclear reactor in Lucas Heights, in southern Sydney, and are desperately pushing for a new reactor.

Despite their failure (withdrawal ?) from the new reactor at Lucas Heights, with the final approvals for Beverley arriving in March from (alleged) Environment Minister Robert Hill and in April from Resources Minister Nick Minchin, Heathgate have been touting Australia as one of their preferred places for future investment. After Beverley, Heathgate said they were looking at possibly coal and other business ventures. Thanks to the "highly profitable" mine they appear to have secured at Beverley (due to the complete lack of decent environmental standards approved), they see Australia as "open-for-business".

We must stay alert and watch and campaign against them in whatever way we can.

9 Miscellaneous Projects

Other high technology areas that GA are involved in include :

- Laboratory services (transmission electron microscopy, scanning electron microscopy, energy dispersive analysis of x-rays, Auger microscopy, atomic force microscopy, x-ray analysis)
- Environmental sensing and monitoring system (E-SMART) for monitoring and detecting environmental pollution and hydrology problems
- Radiation equipment for monitoring, detection, control, display for the global nuclear industry
- Magnetic levitation technology, such as trains for civic purposes, and many other military projects also (eg. - Air Force High Speed Test Track at Holloman Air Force Base, NM)
- Signature and imaging technology for security, based on infrared, radar and optical scanning and material properties (paints, radar-absorbers, etc.)
- Advanced product control technologies for the Agricultural, Petroleum and Chemical industries

10 Known US Military Projects

General Atomics continue to be a major government approved contractor for military research and development. GA have both Secret and Top Secret security clearances with the Department of Defense (also the Dept. of Energy). Some of the key military projects GA is involved with are :

- Reprocessing of chemical munitions ("destroying", at Army's Dugway Proving Ground, McAlester Army Ammunition Plant, now in Dresden, Germany)
- Automated parts cleaning line for the Air Force at the Oklahoma City Air Logistics Center
- Automated inspection systems for military munitions depots (Yuma Proving Ground, Dugway Proving Ground - eg. Stationary Neutron Radiographic System supplied to McClellan Air Force Base)
- Solid state electronics for use in electromagnetic gun technology, designed electromagnetic launchers for torpedoes and aircraft carrier catapults
- Space technology (eg. - miniature power supply for the Clementine lunar orbiter; thermionic and thermophotovoltaic power supplies for satellites)
- Unmanned Aerial Vehicles (UAV) for the US Air Force (ie - remotely piloted)
- Synthetic aperture radar technology for military and civic use in airborne applications
- Technology for the repair of turbine engine blades and assorted software
- Chemicals treatment facilities for the Navy
- Robotic technology for manipulation of hazardous chemicals, munitions and areas
- Advanced materials for military technologies (eg - graphites, carbon-carbon composites, ceramics, ceramic-matrix, thin-film magnetic materials, optical filters, high-temperature insulated wire, and smart microsensor arrays)
- Military inventory management software (eg. - Spare Parts Production and Reproachment Support (SPARES) system for the Air Force at Ogden Air Logistics Center)
- Superconducting magnetic technology (eg. - for use in Navy ships to detect and remove mines in the sea)
- High-level nuclear waste management at the US Army's Hanford military complex
- Thin film technology for low-observable aircraft (stealth technology)

11 Known Subsidiaries and Affiliates

Country	Company and Contact Address	Phone And Fax
Australia	Heathgate Resources Pty Ltd Level 3, 45 Grenfell St, Adelaide SA 5000	Ph (08) 8212 2155 Fax (08) 8212 5559 clfhgt@ozemail.com.au Ph +49 0351 886 4631
Germany	- Umwelt- und Ingenieurtechnik GmbH Zum Windkanal 21, 01109 Dresden - Spezialtechnik Dresden AG (STD) - several subsidiaries Zum Winkanal 21, Postfach 800101, 01101 Dresden - Berlin (company and office address unknown)	Ph +49 351 886 5000 Fax +49 351 886 5443
United States of America	- Sorrento Electronics, Inc. 10240 Flanders Court, San Diego, CA 92121 - Cryotech Deicing Technology 6103 Orthoway, Fort Madison, Iowa 52627 - Nuclear Fuels Corporation - Sequoyah Fuels Corporation - General Atomics Aeronautical Systems, Inc. 16761 Via Del Campo Court, San Diego, CA 92127-1713 - San Diego Supercomputer Center (http://www.sdsc.edu/) American Supercomputer Network Inc. - General Atomics Energy Services, Inc. - General Atomics Sciences Education Foundation (http://www.sci-ed-ga.org/)	Ph +1 619 457 8820 Fax +1 619 453 4675 Ph +1 319 372 6012 (1800 346 7237) Fax +1 319 372 2662
France	TRIGA International - Paris, France (enrichment and fabrication of research reactor fuel, at CERCA, Romans, southern France) (contact Samir Naccache)	Ph +33 1 47 96 54 05 Fax +33 1 47 96 49 03

12 Known Business Partners and Projects

Country	Company	Project
Australia	Australian Nuclear Science & Technology Organisation (ANSTO) Australian Nuclear Science & Technology Organisation (ANSTO) DSJ Consulting / Lisdon Associates / Kinhill Engineers / Holmes Air Sciences / Fatchen Environmental <i>and many others</i>	TRIGA Research Reactor in Thailand. <i>Proposed</i> development of the Beverley ISL Uranium Mine
France	Framatome Framatome	New reactor in Russia to "destroy" plutonium. CERCA TRIGA nuclear fuel fabrication
Germany	Wismut GmbH	Decommissioning of former uranium mines in eastern Germany (old GDR).
Japan	Marubeni Corporation / Hitachi Ltd Fuji Electric	TRIGA Research Reactor in Thailand.
Russia	Ministry of Atomic Energy (MINATOM)	New reactor in Russia to "destroy" plutonium.
Thailand	ATT Consultants Co.	New reactor in Russia to "destroy" plutonium.
USA	Raytheon Engineers & Constructors Burns and Roe / US-DoE Massachusetts General Hospital Boeing North America / Bechtel / Foster-Miller	TRIGA Research Reactor in Thailand. Accelerator Production of Tritium plant. Accelerator for cancer treatment. Magnetic levitation systems (such as trains or military applications).

13 Just The Beginning ?

The history of General Atomics, and even it's present projects and profits, are consistently derived from poor standards, developing expensive and resource intensive military hardware and super technologies, promulgating the myth of nuclear globally, while continuing regulatory violations with litigation, and sometimes at the expense of local indigenous peoples. In the Supplementary EIS, Heathgate even suggest that their litigation with regulators in the USA was not "related to the inability of General Atomics affiliate to perform under the conditions of it's agreements". Somehow, this is entirely inconsistent with the above profile.

And this has been demonstrated with only a brief attempt to document the recalcitrance of GA. One has to ask : Do we want such a pervasive company in Australia ?

A RESOUNDING NO.

14 References

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Appendix One - General Atomics Research Reactors Worldwide (GA, May 1998)

Country	Location	TRIGA Model	Power		Status	Initial Criticality
			Steady kW (t)	Pulsing MW (t)		
Austria	Federal Ministry of Education, <i>Vienna</i>	Mark II	250	250	OP	1962
Bangladesh	Institute of Nuclear Technology, <i>Dhaka</i>	Mark II	3,000	3,900	OP	1986
Brazil	University of Minas Gerais, <i>Belo Horizonte</i>	Mark I	100		OP	1960
Colombia	Inst. of Nuclear Science & Alternative Energy, <i>Bogota</i>	Conversion	100		OP	1997
England	Imperial Chemical Industries <i>Billingham, Teesside</i>	Mark I	250		SH	1971
Finland	The State Institute for Technical Research, <i>Helsinki</i>	Mark II	250	250	OP	1962
Germany	University of Frankfurt, <i>Frankfurt</i>	Conversion	1,000		DE	1977
	Medical College Hanover, <i>Hanover</i>	Mark I	250		OP	1973
	German Cancer Research Center, <i>Heidelberg</i>	Mark I	250		OP	1966
	Johannes Gutenberg University, <i>Mainz</i>	Mark II	100	250	OP	1965
	Association for Radiation Research, <i>Munich</i>	Mark III	1,000	2,000	DE	1972
Indonesia	National Atomic Energy Agency, <i>Bandung</i>	Mark II	1,000		UP	1997
	National Atomic Energy Agency, <i>Yogyakarta</i>	Mark II	250		OP	1979
Iran	Nuclear Research Center, <i>Tehran</i>	Conversion	5,000		SS	
Italy	University of Pavia, <i>Pavia</i>	Mark II	250	250	OP	1965
	National Committee for Nuclear Energy, <i>Rome</i>	Mark II	1,000		OP	1960
Japan	Japan Atomic Energy Research Institute, <i>Tokai-mura</i>	ACPR	1,000	22,000	OP	1975
	Musashi Institute of Technology, <i>Tokyo</i>	Mark II	100		OP	1963
	Rikkyo University, <i>Yokosuka</i>	Mark II	100		OP	1961
Korea	Korea Advanced Energy Research Institute, <i>Seoul</i>	Mark II	250		SH	1962
	Korea Advanced Energy Research Institute, <i>Seoul</i>	Mark III	2,000	2,000	SH	1972
Malaysia	Tun Ismail Atomic Research Centre, <i>Kuala Lumpur</i>	Mark II	1,000	1,200	OP	1982
Mexico	National Institute for Nuclear Research, <i>Mexico City</i>	Mark III	1,000	2,000	OP	1968
Morocco	Ministry of Energy and Mines, <i>Rabat</i>	Mark II	2,000		UC	1999
Philippines	Philippine Atomic Energy Commission, <i>Quezon City</i>	Conversion	3,000	1,000	OP	1988
Romania	Institute for Nuclear Research, <i>Pitesti</i>	ACPR	500	22,000	OP	1979
	Institute for Nuclear Research, <i>Pitesti</i>	MPR 16	14,000		OP	1979
Slovenia	Jozef Stefan Nuclear Institute, <i>Ljubljana</i>	Mark II	250		OP	1966
Taiwan	National Tsing Hua University, <i>Taipei</i>	Conversion	1,000		OP	1977
Turkey	Technical University of Istanbul, <i>Istanbul</i>	Mark II	250	250	OP	1979
Viet Nam	Institute of Nuclear Research, <i>Dalat</i>	Mark II	250		DE	1963
Zaire	Nuclear Science Commission, <i>Kinshasa</i>	Mark II	1,000	1,600	OP	1972
	Nuclear Science Commission, <i>Kinshasa</i>	Mark I	50		SH	1959

OP - Operating; SH - Shutdown; DE - Decommissioning; UP - Upgrading; SS - Suspended.

Appendix Two - General Atomics TRIGA Reactors USA (GA, May 1998)

State	Location	TRIGA Model	Power		Status	Initial Criticality
			Steady kW (t)	Pulsing MW (t)		
Arizona	Arizona University of Arizona, <i>Tucson</i>	Mark I	250	300	OP	1958
Arkansas	Arkansas Technical University, <i>Russelville</i>	Mark I	250	2,000	SS	
California	General Atomics, <i>San Diego</i>	Mark I	250	1,000	SH	1958
	General Atomics, <i>San Diego</i>	Mark F	1,500	6,400	SH	1960
	General Atomics, <i>San Diego</i>	Mark III	2,000		DE	1966
	McClellan AFB, <i>Sacramento</i>	Mark II	2,300	1,200	OP	1990
	Norair Division of Northrop Corp., <i>Hawthorne</i>	Mark F	1,000	1,600	DE	1963
	University of California, <i>Berkeley</i>	Mark III	1,000	1,200	DE	1966
	University of California, <i>Irvine</i>	Mark I	250	250	OP	1969
	Aerotest Operations, <i>San Ramon</i>	Conversion	250		OP	1965
Colorado	U.S. Geological Survey, <i>Denver</i>	Mark I	1,000	1,200	OP	1969
Idaho	Argonne Nat'l. Lab-West (HFEF, INEL), <i>Idaho Falls</i>	Conversion	1,500		OP	1977
Illinois	University of Illinois, <i>Urbana</i>	Mark II	250	6,500	OP	1960
	University of Illinois, <i>Urbana</i>	LOPRA	10		OP	1971
Kansas	Kansas State University, <i>Manhattan</i>	Mark II	250	250	OP	1962
Maryland	Diamond Labs. (U.S.Army), <i>Forest Glen</i>	Mark F	250	1,000	DE	1961
	AFRRI, <i>Bethesda</i>	Mark F	1,000	3,300	OP	1962
	University of Maryland, <i>College Park</i>	Conversion	250		OP	1974
	The Dow Chemical Company, <i>Midland</i>	Mark I	300		OP	1967
Michigan	Michigan State University, <i>East Lansing</i>	Mark I	250		DE	1969
	Veterans Administration Hospital, <i>Omaha</i>	Mark I	18		OP	1959
New Mexico	Sandia National Laboratories, <i>Albuquerque</i>	ACPR	600	12,000	OP	1967
New York	Columbia University, <i>New York</i>	Mark II	250	250	SS	
	Cornell University, <i>Ithaca</i>	Mark II	500	250	OP	1962
Oregon	Oregon State University, <i>Corvallis</i>	Mark II	1,000	3,200	OP	1967
	Reed College, <i>Portland</i>	Mark I	250		OP	1968
Texas	Texas A&M University, <i>College Station</i>	Conversion	1,000	2,000	OP	1968
	University of Texas, <i>Austin</i>	Mark I	250		DE	1963
	University of Texas, <i>Austin</i>	Mark II	1,100	1,600	OP	1992
Utah	University of Utah, <i>Salt Lake City</i>	Mark I	250		OP	1975
Washington	Westinghouse-Hanford-300 Area, <i>Richland</i>	Mark I	1,000		SH	1977
	Washington State University, <i>Pullman</i>	Conversion	1,000	2,000	OP	1967
Wisconsin	University of Wisconsin, <i>Madison</i>	Conversion	1,000	2,000	OP	1967

OP - Operating; SH - Shutdown; DE - Decommissioning; UP - Upgrading; SS - Suspended.