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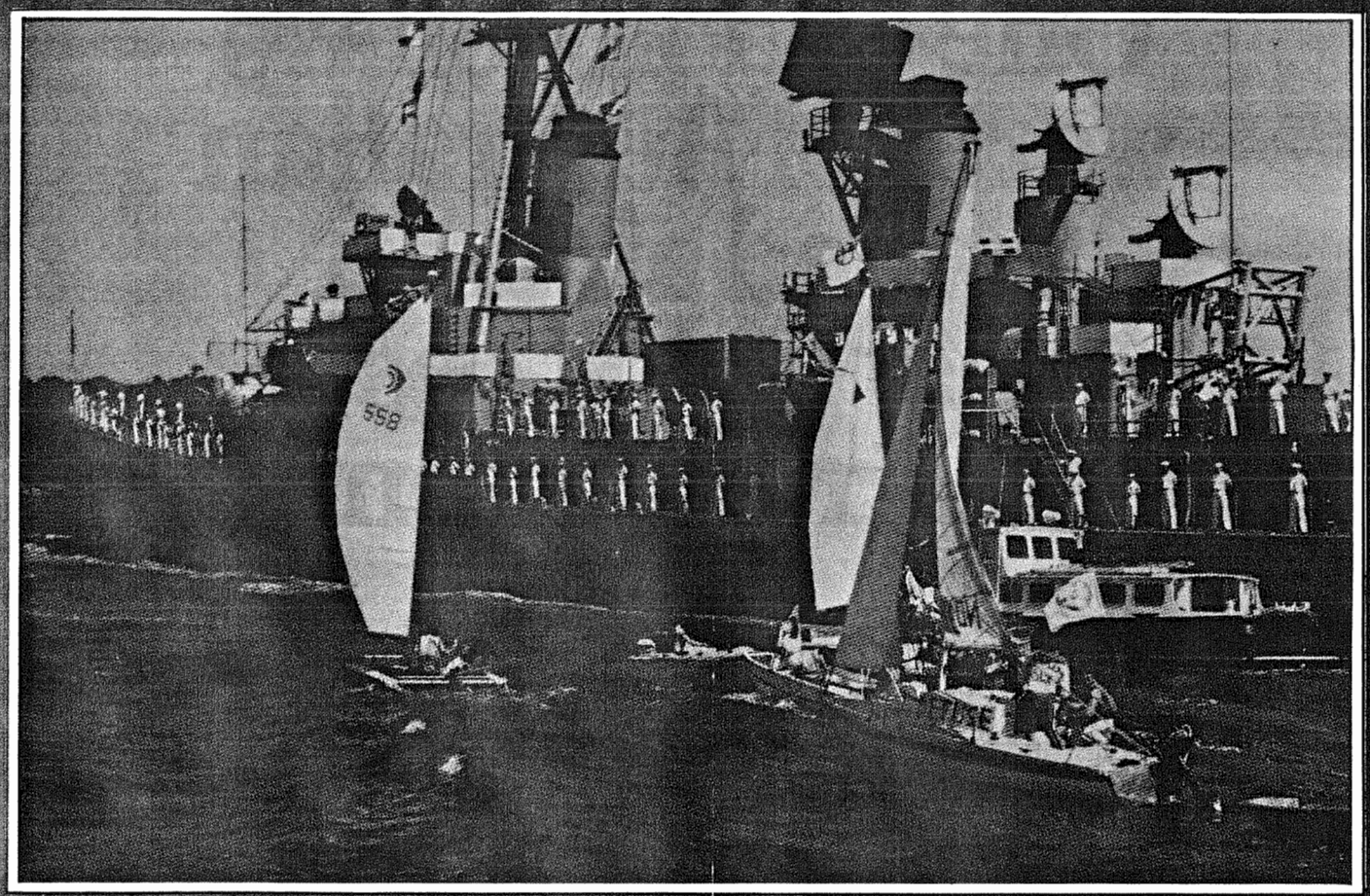
NUCLEAR ACCIDENTS

The risk in warship visits

Lyuba Zarsky, Peter Hayes and Walden Bello



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this month

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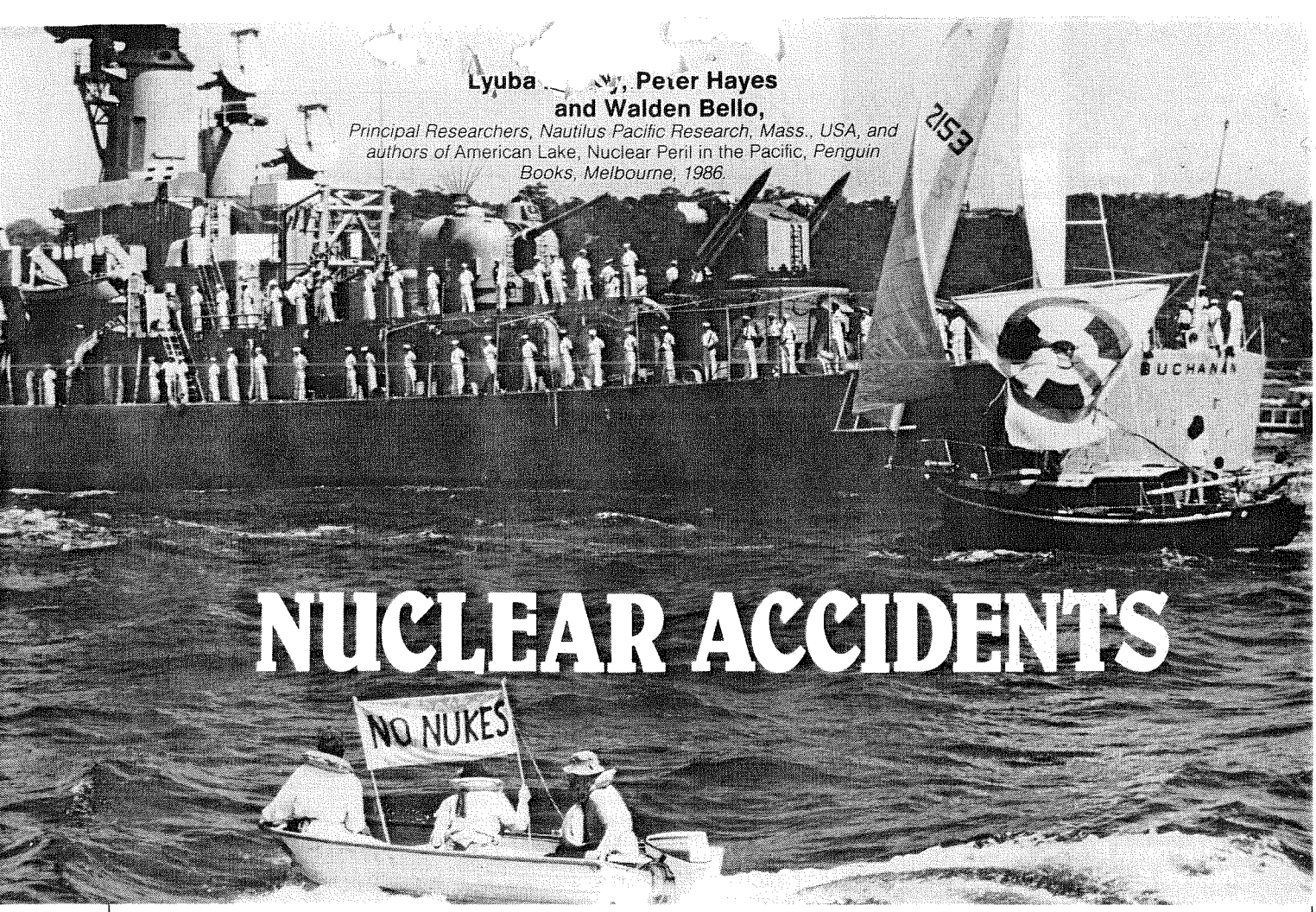

NUCLEAR ACCIDENTS

Nuclear-powered and nuclear-armed warships of the US navy have been visiting Australian ports with increasing frequency. The hazards involved in such visits, in the form of reactor accidents and the targeting of ports in the event of war, have been well canvassed in the media. But the risk of nuclear weapon accidents has been largely ignored despite the fact that serious nuclear weapon accidents have already occurred.

The full implicatons of US nuclear weapon accident planning do not appear to have been reflected in the operations of the Commonwealth Interdepartmental Visiting Ships Panel. The Australian Department of Defence seems to believe that nuclear weapon accidents are covered adequately by general emergency planning for warship accidents in Australia. This article argues that the Department of Defence view is in error.

The increasing frequency of US nuclear-powered and nuclear-armed warship visits to Australia has been widely noted. Since resumption under the Fraser government in 1976, US warship-days spent in Australian ports have approximately tripled; peaking in 1982 (see table 1). The proportion of the visits by nuclear-powered warships has remained between 14 and 22 per cent over the 1976-1984 period. Except for amphibious warfare vessels and Perry-class frigates, most visits are by warship classes certified to carry nuclear weapons.

Stopping in 30 major coastal towns over the previous nine years, the US Navy has shown the flag in virtually every conceivable spot. Just six towns received 70 per cent of the port-days spent by US warships and 65 per cent of the total number of visits to Australia between 1976-1984 (see tables 2 and 3). West Australian ports have seen the Stars and Stripes more often than anyone else, usually hosting about 40 per cent of the warship-days and visits.

US warship visits have engendered much debate over controversial and persistent issues of nuclear hazard. In principle, nuclear warships pose three kinds of risks: reactor accidents; nuclear attack on host port cities; and nuclear weapon accidents. Of these, reactor and targeting risks have received

Can Chenobyl be repeated – even in a minor key – by a nuclear weapon accident aboard a US nuclear warship visiting Australia?

substantial public attention, although the issues remain unresolved.[1]

Nuclear weapon accidents, in contrast, have been largely unexamined.[2] While the US Commander-in-Chief in the Pacific (CINCPAC) routinely neither confirms nor denies 'the presence of nuclear weapons or components on board any ship, station or aircraft,' even if the weapon system has 'been properly identified as having nuclear capability,' virtually *all* classes of US warships visiting forward ports have units which are certified[3] to carry particular nuclear weapons.[4] Any Pacific Fleet vessel of a class so certified may actually carry those nuclear weapons into port.[5]

A US Navy manual describes the handling of nuclear weapons at sea as 'one of the most hazardous of all shipboard operations.' According to the Navy, such handling 'contains all the dangers found in conventional ammunition transfer plus the grave consequences of accidental loss or contamination.'[6] Even if the risk of accident may be less, the consequences may be even greater in congested port cities.

While the problem of vessel pitching while at sea is attenuated in port, warships are more vulnerable to collisions in port than at sea. Furthermore, whereas ships at sea can simply sail away from any radiological mess they may produce, the immobile, dense populations near ports are directly vulnerable to radiological hazards. In the long run, of course, radiological contamination in coastal waters could pose hazards to humans through the food chain.

Table 1: Ship Days in Australian Ports

Ship Type	1976	1982	1984
Nuclear-powered aircraft carriers	7		
Aircraft carriers		18	5
Nuclear-powered guided missile cruisers	13	17	5
Guided missile cruisers	7	18	5
Guided missile destroyers	24	26	21
Destroyers		12	26
Guided missile frigates			49
Frigates	7	111	42
Nuclear-powered attack submarines		37	30
Amphibious warfare, supply or munitions vessels	36	71	59
Totals	94	310	242

Source: US Navy, computer printouts provided to authors.

American officials downplay the risks of such accidents, codenamed variously *Bent Spear, Broken Arrow,* or *NucFlash.* They claim that the probability of accidents involving a nuclear chain reaction approaches zero.[7] Indeed, while the US accepts liability for nuclear *reactor* accidents in foreign ports, it extends no such indemnity for nuclear *weapon* accidents.[8]

Major accidents involving nuclear weapons have... occurred. The best known involved the crashes of two B-52 bombers... both of which caused severe plutonium contamination within the local communities

Major accidents involving nuclear weapons have, however, occurred. The best-known involved the crashes of two B-52 bombers, one in Palomares, Spain, in 1966 and the other in Thule, Greenland, in 1968, both of which caused severe plutonium contamination.[9]

1 See, for example, Australian Atomic Energy Commission, *Visits of Nuclear-Powered Warships to New South Wales Ports,* Sydney, September 1977; D. Kaplan, *The Nuclear Navy,* Fund for Constitutional Government Report, Washington, D.C., July 1983; D. Ball, 'Limiting Damage from Nuclear Attack' in ed. D. Ball, and J. Langtry, *Civil Defence and Australia's Security in the Nuclear Age,* Allen and Unwin, Sydney, 1983, p. 167.

2 A significant exception is M. Wilkinson, 'After the Big Blast, The Disturbing Reality of Nuclear Accidents,' *National Times,* 22 March 1985, p. 11.

3 A 'certified' vessel is one which has qualified to carry nuclear weapons by meeting rigid training requirements and by passing a Nuclear Weapons Acceptance Inspection.

4 CINCPAC, 'Release of Information on Nuclear Weapons,' Instruction 5720.2D, 20 January 1982, p. I-2, released under a Freedom of Information Act request.

5 See Appendix, Nautilus, *Warships and Warheads, US-Pacific Connections,* Box 309, Leverett, Massachusetts, 1984.

6 Chief of Naval Operations, *Loading and Underway Replenishment of Nuclear Weapons,* NWP 14-1 (Rev. C), 1983, p. 3-1, released under a Freedom of Information Act request.

7 US Defense Nuclear Agency, *Nuclear Weapon Response Procedures Manual,* DNA 5100.1, Washington, DC, 1984, p.81.

8 The US Public Law 93-513 states that 'it is the policy of the United States that it will pay claims or judgments for bodily injury, death or damage to or loss of real or personal property proven to have resulted from a nuclear incident involving the nuclear reactor of a United States warship.'

9 Defense Nuclear Agency, *The Palomares Summary Report,* DNA Field Command, Technical and Analysis Directorate, January 1975; US Air Force, 'Project Crested Ice', *USAF Nuclear Safety,* Vol. 65, Part 2, AFRP-122-1-Jan/Feb/March 1970, No. 1.

Another accident, at McGuire Air Force Base, New Jersey, in 1960, involved a nuclear missile which caught fire and melted after a helium bottle aboard the missile exploded. The fire burned for 45 minutes, spreading plutonium over an 'undetermined number of acres.'[10] That the Pentagon regards it as possible that future accidents could occur despite the past experience[11] is evidenced by its series of nuclear weapon accident exercises.

NUWAX

Codenamed *Nuwax*, these nuclear weapon accident exercises are currently guided by the Defense Nuclear Agency's *Nuclear Weapons Accident Response Procedures Manual,* which distills US military thinking on the subject. Released to the authors under the Freedom of Information Act, the *Manual* reveals a different attitude towards the hazard of nuclear accidents from that expressed overseas. According to the *Manual* there is a 'very real possibility of radioactive contamination at the accident scene, and extending many miles downwind.'[12]

The US Navy regards nuclear accidents as it views nuclear war at sea – easily isolated – and... controllable and fixable

Other documents reveal that the US military held week-long *Nuwax* exercises in 1979 (Nevada test site), 1981 (Nevada test site) and 1983 (Virginia). These exercises involved 700-1,000 personnel whose mission was to recover mock nuclear weapons damaged by impact, fire and high explosive detonations. To enhance the 'realism' of the exercises, radioactive radium 223 was sprinkled in the area to simulate weapons-grade plutonium.

The exercises revealed that the response to nuclear accidents is problematic, due in part to the disinterest and inexperience of US officials responsible for the operations.[13] Additionally, *Nuwax* uncovered defects in response capability which appear to be inherent in the nature of nuclear accidents. These deficiencies include unreliable communications capability, grossly delayed warning messages and undefined levels of acceptable radiation exposure and site restoration levels – termed a 'monumental problem' in the official report.[14]

No further full-scale, Defense Nuclear Agency co-ordinated field *Nuwaxes* are planned before 1989. In the meantime, civilian agencies such as the Department of Energy, the Federal Emergency Management Agency and military agencies such as the Defense Nuclear Agency and the services (Navy, Air Force, Army, unified commands, such as Pacific Command, and functional commands such as Military Airlift or Sealift Command) will conduct command post exercises for nuclear weapon accidents. In a command post exercise, a script is written, messages are sent, and the command and communications infrastructure is activated and tested as if a nuclear accident has occurred.

Crisis Action Teams

Difficult enough under test conditions within the US, these problems would be compounded in a nuclear weapon accident overseas. US plans for such an event call for rushing rapidly deployable satellite and sideband radio communication units to the site, possibly from the Naval Communications Station in the Philippines, where a mobile unit stands on alert for such contingencies. This Pacific Fleet unit is called an Ashore Mobile Contingency Communications system and provides HF radio, teletype and voice circuits and UHS satellite secure voice circuits. It is transported in a C-130 aircraft or a CH-53 helicopter.[15]

According to one well-informed Pentagon official, Pacific Command's nuclear accident teams 'are really hot on this.' Navy Nuclear Accident Response Crisis Actions Teams (CATs) are 'all over the place,' he adds, at overseas bases and travelling aboard warships in the Pacific.[16]

Recently disclosed documents reveal that Pacific Command maintains an office to respond to nuclear accidents. The Nuclear Safety/Security Branch of Pacific Command, known as J322, is 'Responsible to the Chief, Nuclear Operations and Safety Division for various aspects of Nuclear Safety/Security in the USPACOM [US Pacific Command]'. It also 'has primary cognizance of nuclear weapons accidents/significant incidents and nuclear reactor accidents in the USPACOM'. [17]

The Commander-in-chief, Pacific, is required to support a nuclear weapon accident plan for accidents in Pacific Command. His staff keeps an up-dated accident plan in Hawaii and participates in Defense Nuclear Agency-sponsored training courses. His scope includes Hawaii and US territories such as Guam and host nations in Pacific Command. Civilian agencies such as the Federal Emergency Management Agency and the Department of Energy are also involved in US territories.

In the Pacific, the US Navy is the most important source of possible nuclear weapon accidents. Yet it has the most fragmented and incoherent nuclear weapon accident 'response and recovery' system of the services. According to one well-placed confidential source, 'Our greatest fear is that the Navy is not holding them [nuclear weapon accident exercises] anywhere.' Always tradition-bound, the Navy resists external 'meddling' in its affairs. According to one source, 'the problem is, their reactor guys like to control everything,' making it difficult to co-ordinate the full response and recovery capabilities of the US military in a coherent effort.

NUWAX 83: Simulated crash of a Navy helicopter carrying radioactive materials which were scattered around the test site. This photograph, supplied by the US Defense Nuclear Agency, reveals the lack of preparedness to deal with nuclear accidents – the fire fighters have no protective clothing against radiation

Potential naval nuclear weapon accidents are very specialised, being unique to the kind of nuclear weapon involved, the launch platform and the functional unit. Unlike the Air Force or the Army, there is no central Navy co-ordinating office for its nuclear weapon accident activity, either simulated or real. The US Navy regards nuclear accidents as it views nuclear war at sea – easily isolated – and with a 'can do' attitude, that is, that they are controllable and fixable. The Navy has not held a major exercise since the big Defense Nuclear Agency *Nuwax-83.*

The US Air Force also has an active nuclear weapon accident program. Strategic Air Command conducts major field exercises, quite often simulating B-52 or F-111-type crash disasters. All Pacific Air Force bases hold at least one such exercise each year. The Air Force also conducts less extensive exercises monthly at the New Mexico Kirtland Air Force Base Senior Officers' Advanced Training Course. A simulated nuclear bomb catastrophe is conducted, personnel 'suit up' for clean-up under conditions of simulated radiological exposure, and so on.

In Pacific Command, each military service follows its own procedures to respond to and recover from nuclear accidents. These procedures, terminology and equipment differ across services. According to a reliable military source, the services have adjusted their procedures to increase compatibility as a result of the Defense Nuclear Agency's *Nuwax* series, but the trend is 'not sufficiently mature to make an impact.'

While the *Nuwax* exercises responded to US -based accidents, the official report for *Nuwax-81* specifically addressed the problems of overseas nuclear weapon accidents. 'Extensive consultation with the Department of State and local US embassies', states the report, 'is required to co-ordinate US efforts overseas.' Noting that *mutual* training is 'essential', the report adds that: ' US and host capabilities need to be *blended* for a coherent plan and a capable response force'. The report recommends joint exercises and the development of overseas versions of the *Response Manual* tailored to each country.[18] To date, however, little has been done to implement these recommendations. The US has struck agreements for joint response with some host nations, although the countries involved are unknown. According to one military source, holding nuclear weapon accident exercises with allies is generally regarded as 'too politically sensitive for us folks in the military'. 'It's up to the international relations boys to carry the burden, and the State Department's in charge,' he added.

10 R. Pierson, 'New Jersey Government Blasts Pentagon on Secret Nuke Blaze', *New York Post,* July 10, 1985, p. 7.
11 See US Department of Defense, 'Nuclear Weapons Accidents: 1950-1980', in Center for Defense Information, *The Defense Monitor,* Vol. 10, no. 5, 1981; G. Hanauer, 'The Story Behind the Pentagon's Broken Arrows', *Mother Jones,* April 1981; and M. Leitenberg, 'Accidents of Nuclear Weapon Systems', *SIPRI Yearbook 1977,* Taylor and Francis, London, 1977.
12 US Defense Nuclear Agency, *Manual,* note 7, p. 44.
13 US Defense Nuclear Agency, *Joint DOD/DOL Nuclear Weapons Accident Exercise (NUWAX-79),* After Action Report, Kirtland Air Force Base, New Mexico, Vol. 1, p.1. Reports of the same title were issued in 1981 and 1983, and referred to hereafter as *NUWAX-81* and *NUWAX-83.*
14 US Defense Nuclear Agency, *NUWAX-81* report, Note 13, Vol. 1, pp. 10, 42; see also the same report series for US Defense Nuclear Agency, *NUWAX-83,* pp. 9, 13; and M. Wilkinson, Note 2.
15 US Defense Nuclear Agency, Note 7, p. 98.
16 Interview, Washington, D.C., 15 March 1985.
17 Commander-in-Chief Pacific, *Organization and Functions Manual, FY 84,* CINPAC Instruction 5400.6K, 3 December, 1983, p.76; released to P. Wills under a Freedom of Information Act request.
18 Authors' emphasis, see US Defense Nuclear Agency, *NUWAX-81* Report, Note 13, Vol. 1, p. 14.

Table 2: US Warship Days in Australian Ports, 1976-1984

	1976	1977	1978	1979	1980	1981	1982	1983	1984	Total
Adelaide		5								5
Albany		4		1		6	5	13	4	33
Brisbane	14		18	9		13	18	5	8	85
Bunbury		11	5		9	13	28	25	10	101
Burnie					5					5
Cairns	7		12							19
Cairns Harbour				3	7				5	15
Cockburn Sound/HMAS Stirling				8	52	76	49	68	24	277
Darwin			5		3			8	25	41
Devonport		2	2		5					9
Esperance		34		2						36
Fremantle			58	5	48	87	122	66	90	476
Geelong	7			5		5				17
Geraldton		11	7	4	9	23	29	30	10	123
Hobart	7		6	8	5		12	19	9	66
Jervis Bay							2	1		3
Launceston		2	2	5		5				14
Mackay			4						8	12
Melbourne	20	5	2	17	21		10	2	20	97
Onslow			5	5	1					11
Perth	7			35	51	15				108
Port Adelaide				4	4		5		4	17
Port Hedland				2	3				2	7
Port Kembla	5									5
Port Lincoln					5					5
Portland		5								5
Sydney	25	4	22	57	18	57	30	11	20	244
Townsville			8	5		4		3	3	23
Wyhalla					4					4
Year Totals	92	83	156	175	250	304	310	251	242	1,863

Source: US Navy, computer printouts provided to authors.

Blending

'Blending', however, would have a rather specific meaning in a Pacific host nation. Since the US military is determined to defend its nuclear secrets, it insists that only US personnel cleared for 'Critical Nuclear Weapon Design Information' have access to the damaged weapons themselves.[19] These conditions apply in domestic nuclear accidents, and it is logical to assume that they will be applied even more stringently in overseas accidents. Such has also been the historical experience.[20]

As the shape, form, or outline of nuclear weapon components may also reveal these secrets, the site must be protected against visual access and overhead photography.[21] And because unfriendly elements or enemy or dissident elements may listen in to site radio communication, thereby obtaining classified compilations of individually unclassified material, the *Manual* instructs the use of equipment which scrambles voice into unrecognisable garble to defeat this threat.[22]

How the US would obtain (or assert) control over an overseas nuclear accident area is a key issue. For a nuclear accident in US territory, the military anticipates setting up a National Defense Area, to protect classified bits and pieces. The National Defense Area is not intended to cover the contaminated area, which could extend miles downwind. Instead, it is to cover the maximum area over which a one-point detonation could blow components of the nuclear weapon. The military have calculated this distance to be about 600-700 metres from the site, to which are added any areas providing direct visual access, and including overhead aircraft views below 5,000 feet.

A one-point detonation refers to a safety design whereby one of the multiple detonators in a nuclear bomb is exploded. In a nuclear weapon, multiple detonators are required to ram the fissile materials together into a critical mass to initiate a chain reaction. A 'one-point safe' nuclear weapon is thus designed to blow the weapon apart, deforming and deactivating the warhead before the warhead can be imploded by the other detonators. When the 'point' explodes, it can blow apart the bomb and the fissile material, and ignite fires which spread radioactive particles into the environment.

Even in an accident, the US will stick to its neither-confirm-nor-deny policy about the presence of nuclear weapons. Indeed, US officials may even purposely issue *false* public information to divert attention from the shipment of damaged nuclear components – a practice for which the participants in the 1983 *Nuwax* exercise were criticised.[23]

The bottom line

Requirements to keep accident sites off-limits to all except authorised US personnel imply that host nations will be obliged to relinquish sovereignty over the site for the duration. To add insult to injury, the US military will probably call on host

Table 3: US warship visits to Australian Ports, 1976-1983

	1976	1977	1978	1979	1980	1981	1982	1983	1984	Total
Adelaide		1								1
Albany		1		1		1	1	4	1	9
Brisbane	3		4	1		4	4	1	4	21
Bunbury		2	1		3	3	5	4	2	20
Burnie					1					1
Cairns	2		3							5
Cairns Harbour				1	2				1	4
Cockburn Sound/HMAS Stirling				1	9	12	8	11	4	45
Darwin			1		1			2	7	11
Devonport		1	1		1					3
Esperance		6		1						7
Fremantle			11	2	10	15	23	19	22	102
Geelong	1			1		1				3
Geraldton		2	1	1	3	4	5	5	2	23
Hobart	1		1	2	1		3	3	2	13
Jervis Bay							2	1		3
Launceston		1	1	1		1				4
Mackay			1						2	3
Melbourne	3	1	1	4	7		2	1	4	23
Onslow			2	4	1					7
Perth	1			7	11	3				22
Port Adelaide				1	1		1		1	4
Port Hedland				1	1				1	3
Port Kembla	1									1
Port Lincoln					1					1
Portland		1								1
Sydney	5	1	4	13	4	14	7	3	4	55
Townsville			2	1		1		1	1	6
Wyhalla					1					1
Year Totals	17	17	34	43	58	59	61	55	58	402

Note: Entries are numbers of visits to each port; one warship may visit multiple times in any year
Source: US Navy, computer printouts provided to authors.

nation security forces to guard the site. According to one highly-placed military source, 'The bottom line is that we would secure the inner ring, and they [the host nation/ally] would secure the outer ring.'

The US military are deadly serious about maintaining control of the site. In the 1981 *Nuwax* exercises, for example, several military acting as demonstrators at the site broke through the security cordon and, as the report put it: 'It was simulated that one demonstrator was shot.'[24]

Requirements to keep accident sites off-limits to all except US personnel imply that host nations will be obliged to relinquish sovereignty over the site for the duration

The Pentagon has already drafted soothing but bizarre press statements for release in the event of nuclear weapon accidents. 'Contingency Release Number 3, When Public is Probably in Danger,' instructs residents that:

The most appropriate initial action is to remain calm and inside homes or office buildings. Turn off fans, air conditioners, and forced air heating units. Drink and eat only canned or packaged food that have been inside. Trained monitoring teams wearing special protective clothing and equipment will be moving through the area to determine the extent of any possible contamination. The dress of these teams should not be interpreted as indicating any special risk to those indoors.[25]

The worst case

Current response planning for nuclear accidents bases its worst case scenario on the most dangerous, factual accidents. Defined in the *Manual* as 'off a military installation with a spread of contamination, difficult weapon recovery problems, public involvement, extensive logistic support, and site restoration problems',[26] this scenario is simply the same as occurred in the 1966 and 1968 accidents.

The *Manual* also refers to the contamination problems arising from nuclear fission products such as strontium 90 and iodine 131 which would be produced in either a sub-critical or full-scale nuclear chain reaction.[27] A sub-critical event occurs when a

19 US Defense Nuclear Agency, Note 7, p. 71.
20 See, for example, T. Szulc, *The Bombs of Palomares*, Viking Press, New York, 1967.
21 US Defense Nuclear Agency, Note 7, p. 106.
22 ibid., p. 101.
23 US Defense Nuclear Agency, *NUWAX-83* Report, Note 13, Vol. 1, p. 34.
24 ibid., *NUWAX-81* report, Vol. 2, p. 26.
25 US Defense Nuclear Agency, Note 7, p. 123.
26 ibid., p. 33.
27 US Defense Nuclear Agency, Note 7, p. 81.

chain reaction begins in a mass of fissionable metal, but blows itself apart, thereby halting the reaction and scattering radioactive material. A chain reaction occurs when the chain reaction becomes self-sustaining, generating a full-scale nuclear explosion.

The possibility of sub-criticality is admitted obliquely in the official definition of 'one-point safe' nuclear weapons: 'In the event of a detonation initiated at any one point in the high explosive system, the probability of achieving a nuclear yield greater than four pounds of TNT equivalent shall not exceed one in one million.'[28] This definition allows for nuclear yields with less than four pounds of TNT equivalent and/or lesser probabilities. Not all nuclear weapons incorporate 'one-point safe' design, allowing the possibility that nuclear yields may exceed four pounds with a higher probability than one in one million.

While US officials insist that such events are highly unlikely, such statements are strictly meaningless since it is impossible to predict precisely either the origin or the sequence of events in a real accident.

In 'host nations', certain events seem likely to generate accident conditions: 'cross-decking' nuclear weapons between ships near or in ports, for example, between aircraft carriers; helicopter airlift between storage depot and port or airfield; the bouncing missile syndrome, in which a missile/bomb or its warhead is dropped by mistake; and an aircraft shipping nuclear weapons back to US repair depots or dispersing just before a nuclear war.

A Pacific Fleet instruction in November 1981 notes another route to a nuclear accident: 'Detonation of high explosive components of a nuclear weapon, in addition to exposing personnel to blast, thermal and toxic gas effects, may spread radioactive material, thereby contaminating casualties and the incident/accident area.'

Each nuclear-armed vessel was ordered to establish a nuclear casualty medical team to respond to such events. Commanders were instructed that: 'Human remains, which after decontamination show considerable contamination, will be wrapped and sealed in sheet polyethylene and stored in a properly labeled human remains case' – that is, a coffin.[29]

All that can be said is that the likelihood of nuclear weapon accidents may decline with improved designs, may increase as thousands of new weapons are deployed and probably increases in times of rising international tension as the frequency of weapons handling increases. It can be said with certainty that accidents which exceeded the worst nightmares of US nuclear planners have already occurred, and US officials take them seriously enough to create a response capability in the US and the Pacific, albeit one that is seriously flawed.

Key issues

Currently, Australia appears to be unprepared to respond to and recover from a major nuclear weapon accident.

Proponents of nuclear ship visits have long argued that the risk of a nuclear weapon accident is so small as to require no public concern and no official preparations.

It can be said with certainty that accidents which exceeded the worst nightmares of US nuclear planners have already occurred

Theoretically, such a statement is indefensible because there is no scientific, risk-benefit method to guide public policy on the acceptability of improbable *catastrophic* events.

It is imprudent to expose Australians to the risks of nuclear weapon accidents without developing an active response and recovery capability dedicated to this contingency and at least as competent as that required by the US military to protect Americans against the same risks. Practically, the US standards are the minimum level of protection with which Australians should be satisfied.

By continuing with business-as-usual, Australia is exposed to the risks *and* compounds them by taking no precautionary steps to protect itself against the worst case, a major nuclear weapon accident.

If careful investigation determines that the same level of protection is adequate, then the implications for Australia should be faced. At minimum, realistic plans should be drawn up with public participation, and most important, the relevant authorities should conduct simulated nuclear weapon accidents under realistic conditions, in Australian ports and airfields, following the US example. Furthermore, *these exercises should be held jointly with the US military* as recommended by the Defense Nuclear Agency's *Nuwax-81* after-action report.

Capabilities seriously flawed

Alternatively, detailed investigation may show that US response and recovery capabilities are seriously flawed, as admitted by American evaluations of the *Nuwax* series.[30] In this case, Australia has two options.

First, it can adopt, create and exercise (with the US) *more stringent* response and recovery procedures and capabilities. Whether the same or more stringent standards are adopted, such a response and recovery capability must be shown to be consistent with Australian *sovereign control* over the events and territory at all times. Current US plans and procedures for responding to nuclear weapon accidents appear to contravene host nation sovereignty, and would need to be adjusted to accommodate Australian sovereignty.

Second, it can *reconsider its open-access policy,* and either *ban nuclear-capable* US warships and warplanes, or it can simply *ban all* US warships and aircraft.

If the partial ban on nuclear-capable units were imposed, Australia could conduct passive or active verification measures to ensure that such conditions for visits are being observed by the US. [31]

Continuation of current policy is reckless. By abdicating official responsibility at the time it is most needed – in the midst of crisis – the Australian Government has failed to grapple with one of the most important hazards associated with nuclear warship visits.

The time for a detailed and public examination of this issue is long overdue.

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28 The definition, from the US Arms Control and Disarmament Agency in 1980, is found in T. Cochran, et al., *US Nuclear Forces and Capabilities,* Ballinger, Cambridge, Massachusetts, 1984, p. 67.

29 Commander-in-Chief, US Pacific Fleet, 'Medical Department Responsibility and Procedures in the Event of a Nuclear Weapons Incident/Accident,' CINCPACFLT Instruction 6470.2C, 6 November 1981, pp. 1-2. Released under F.O.I.A. request to Peter Wills.

30 M. Wilkinson, Note 2.

31 See A. Gsponer, 'Technical Feasibility of the Detection of Nuclear Weapons', in S. Lodgaard and M. Thee, edited, *Nuclear Disengagement in Europe,* Taylor and Francis, 1983, pp. 209-219.

International Terrorism

The article by Andrew Selph on International Terrorism, which appeared in the May issue of CAB [Vol. 62, No. 12], contained a number of significant editorial changes which, because of an administrative error, were not cleared with the author before publication.

CAB apologises for any embarrassment caused to the author.