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From: Pdig@aol.com  
Message-ID: <971028135450\_-292054338@emout05.mail.aol.com>  
To: cndscot@dial.pipex.com  
cc: nipdimac@gn.apc.org, cnd@gn.apc.org, nfnzsc@gn.apc.org, MSomCND@aol.com,  
medact@gn.apc.org, cndyorks@gn.apc.org  
Subject: Nuclear Accident Liaison Meeting - Plymouth

For your information (c. 5 pages of text) - please pass on to anyone you might think interested.

John Scotland, John Yorks, Stewart Manchester -I will also send a hard copy by post.

DIG Plymouth nuclear Dump Information Group

Nuclear Emergency Community Liaison Group Meeting

Tuesday 21st October 1997, 7.00 -9.00pm  
Parkside Comprehensive School Devonport, Plymouth

**Panel**

Steve Fletcher, (Chaired Meeting) Director of Corporate Services, Plymouth City Council  
Captain Peter Hurford, Captain Base Safety, Devonport Dockyard  
Lieutenant Commander David Yates, Navy Safety Officer, Devonport Dockyard  
Dr. Sarah Harrison, Consultant in Communicable Disease Control, South & West Devon Health Authority (standing in for Dr. Gina Radford, Plymouth Director of Public Health)  
Peter Smith, City Emergency Officer, Plymouth City Council  
Peter Barnes, Assistant City Emergency Officer, Plymouth City Council  
Police Superintendent Goffin (Gossin?), Devon & Cornwall Constabulary

Audience included several city councillors (inc. Lemin, Stevens, Palmer), school governors ( inc. Ken Tucker), Red Cross, DIG (Nopps Shotton, Peter Russell, Kevin Owen), DML execs. (inc. Andrew Clark), Radio Devon, Plymouth Evening Herald (Patrick Barrie), rep. from College of Further Education, PCC Environmental Health (Nigel West), Navy PR (Allison Potter-Drake).

DIG comments in parentheses ( )

Chair introduced the panel.

Capt. Hurford gave an overhead slide presentation showing usual slides of submarine diagrams, cut away of reactor, steam generation, cartoon of sub with radiation cloud passing over a house and a cow(!) etc.

He spoke about sub. accident risks, emergency procedures and distribution of Potassium Iodate Tablets (PIT's) and a survey conducted by the University of Plymouth on the PIRER booklet distributed to households in 1996. He then took questions. Dr. Harrison was meant to do a similar presentation, but did not have time due to the number of questions from the floor, so she chipped in when invited.

Notes:

Capt. Hurford said nuclear subs. were a lot less dangerous than civil nuclear reactors being 30x smaller therefore the accident consequences were reduced (DIG pointed out that sub. reactor fuel was highly enriched uranium, much more contaminated than civil fuel due to long periods between refuelling. Also several subs. could be within the city at any one time, either in refit, maintenance, reactor power range testing or alongside.

Capt. Hurford did not agree that nuclear sub. fuel was more dangerous than civil.)

Capt. Hurford said there were several layers of containment within a nuclear submarine. Any problem involving a submarine reactor would be contained within the reactor chamber, or within bulkheads, or the submarine hull.

If a release occurred, sailors would get out and shut the hatches (sic), preventing any release of radiation. Any accident would be slow to develop giving "plenty of time to deal with the problem". Even if there was a fire on board, the nuclear accident siren would not be sounded until it was clear that the incident may develop into something more serious. Capt. Hurford said there had been two incidents involving fire on British submarines. One was at Liverpool in 1976 (probably HMS Warspite) and HMS Turbulent which caught fire in 1992 at Devonport. Capt. Hurford said neither were serious and no public emergency alerts were necessary in either case (we know that Warspite was seriously damaged and had to have an extensive refit afterwards. Officers on Turbulent were subsequently decorated for shutting down the reactor. 22 ratings were hospitalised with toxic fume inhalation, torpedoes were 'dragged' off onto barges as it was thought by some of the crew that the sub would sink).

Capt. Hurford said 'gamma shine' may occur within the immediate vicinity of the stricken sub. An immediate exclusion zone would be thrown around it, but there would be no gamma shine beyond the immediate area of the submarine, therefore there would be "no risk to the public from gamma shine". DIG asked Capt. Hurford if radiation could be emitted from a passing radiation cloud or from particle deposits on the ground. He said this was possible.

We asked if this could be gamma radiation. He said it could be (!). Capt. Hurford said any release of radiation would be a "gaseous or aerosol cloud", in the form of "very fine particles like fly spray". The cloud would be "windborne" and it would be "like the smoke from a fire" (although unlike smoke, it could be invisible). Capt. Hurford said it was now "accepted that any radiation exposure increases the chances of contracting cancer in later life". With a nuclear submarine accident, it would be

"virtually impossible for there to be any acute cases of radiation sickness". He said there was natural radiation coming off granite rocks in the SW and people were already exposed to radioactivity such as radon gas.

Capt. Hurford went on to describe how in the event of an emergency the warning sirens would sound alerting the public to follow their PIRER booklet information. Radioiodine in a cloud would be the principle problem and so people would be advised to take shelter. Capt. Hurford said that sheltering in a typical house could give 3-4 times protection from the effects of a passing radiation cloud. A large building, such as a school hall, could give 10-12 times the protection. When asked why, he said the further you were away from walls and windows the better to avoid gamma shine (see previous note on gamma shine).

Capt. Hurford said that in the event of an accident, dockyard workers and Navy personnel will be mustered at sheltering points. From this group, Naval ratings would be "nominated" for PIT's distribution duty by senior Navy officers. We asked if 'nominated' meant 'ordered'. He agreed that they would in fact be 'ordered' to undertake PIT's distribution. We asked if it was correct to order young Navy personnel into a radioactively contaminated area. He confirmed this was correct and saw no problem at all with this.

Capt. Hurford described how the 2km area around the nuclear dock had been divided into 60 zones (up as far as the Parkway, east as far as Milehouse, around 30,000 households). The wind direction would determine where a radiation cloud would go and the houses in the zones within that direction would be distributed with PIT's. 50 Navy personnel would deliver PIT's. They would deliver PIT's on foot working in pairs. They would be driven to the zones in MoD buses. Capt. Hurford said there were buses at the dockyard which could be used. They would be given boxes of tablets, information sheets to go with the tablets with instructions for residents on taking the tablets, a photocopied street plan of their zone, a sheet of instructions on the route they should take when delivering PIT's and given a paper face mask to wear if during PIT's distribution a release of radiation occurred (in Dec.1996 Capt. Hurford stated "radiation protection apparatus would not be worn").

Capt. Hurford said the paper mask would be sufficient to protect the PIT's teams. We asked if the masks would be worn all the time. Capt. Hurford said only in the event of a release of radioactivity. We asked how the PIT's teams would know a release had occurred. Capt. Hurford said the sirens would be sounded again. (the PIRER instructions state that after hearing the warning siren, in due course a second siren would sound indicating the all clear. Capt. Hurford did not indicate how the public would know the difference between the two which could result in the public leaving shelter at the moment of a radiation release!)

Capt. Hurford claimed the teams of PIT's distributors should be able to deliver tablets within 1 hour. (Capt. Hurford showed a slide of a typical zone. Quickly counting the lists of houses on the slide, we estimated there to be well over 300 PIT's drops (houses/flats etc.) within the zone to be completed within 1 hour by the two distributors. There was no indication if this was a typical zone or if the time taken included transportation to the drop zone).

It was asked by a city councillor if in the event of the wind changing direction, how would PIT's be delivered to the new zones, by the same people?

Capt. Hurford said that fresh distributors would be found. Monitoring of the zones would be undertaken by Landrovers dispatched from the dockyard with monitoring equipment. We asked how the Landrovers would be dispatched before a release of radiation to determine which zones were to be given PIT's when at that time there would be no radiation to detect. Capt. Hurford said this would be achieved on receipt of information on wind direction from the source of any potential release. (It was not clear how a few Landrovers could accurately determine which zones were affected or how such information could be gathered and acted upon within 1 hour).

The 50 distributors would push tablets and information sheets through letter boxes. There would be no verbal 'on- the-doorstep' advice. (12 months ago the Navy said 200 Navy/military personnel would act as PIT's distributors. 6 months ago they reduced the number to 60) Capt. Hurford confirmed that a dummy run would take place in November at the time of Exercise Kismet to test the distribution plan. A reporter from the local press asked, as the Navy were clearly not yet convinced that their plan would work, what if an accident occurred now? Captain Hurford had to agree that there was currently no tested plan in place.

Although the PIT's plans only go out as far as 2km, Capt. Hurford said, "fission products could go past 2km". A city councillor asked about the neat uniform direction of the radiation plume shown on Capt. Hurford's slide and asked if the cloud could spread "horizontally". Capt. Hurford said they, "would not know the meteorological conditions" at the time and that such information would have to be gathered.

We asked Capt. Hurford if it was true that as many as 200 different radionuclides could be released during a nuclear submarine reactor accident as we had read this in a Navy training manual. He confirmed this was probably the case, but that radioiodine would be the predominant problem "as it was at Chernobyl".

Capt. Hurford said it may be necessary to evacuate some residents, but that was the responsibility of the local authority, "who would have to make arrangements". We asked Peter Smith, the city emergency officer, if there had been any progress since we had discussed the evacuation problem two years ago when he had told DIG that he did not know how many people would need evacuating (he preferred to call it 'relocating') or where they would go.

Mr. Smith said that in the past, such matters had come under Devon County Council, but with the imminent change to unitary status for Plymouth, evacuation plans would be discussed when that occurred next year. In any case he stated that the responsibility for evacuation "was with the police" (!) The police inspector at the meeting opted to stay silent on this point!

Capt. Hurford said there was a "chance of a nuclear alert, once in a lifetime". He was asked what was meant by this. He said statistically the sirens could be sounded once in 70 years indicating an incident of some sort. In 100 years the sirens may indicate a possible accident. In 1000 years there could be contamination within a submarine. In 7000 years there could be the possibility of a release of radioactivity.

Capt. Hurford referred to a study by the Department of Sociology at the University of Plymouth to monitor the distribution and effectiveness of the Navy's PIRER booklet in 1996. (Authors: Lyn Bryant, David Mason, Steve Rendle - dated Sept. 1997).

Capt. Hurford showed some of the results of the survey on overhead slides.

Some details of the survey shown by Capt. Hurford

Accurate to + - 4.5%

550 dwellings surveyed of which 237 (43.1%) were terraced housing

Of 337 people questioned, 289 (76.5%) remembered reading PIRER booklet

Of those, 67.5% remembered to go indoors in an emergency

80% of the 76.5% (above) acknowledged importance of taking PIT's

Suggestions from the public included the need for a wider range of communications, particularly at schools.

#### Recommendations of the Survey

1. Review the method of distribution
2. Inform new residents
3. Continue with the advice (PIRER)
4. Refresh advice
5. Widen range on communications methods
6. Discuss PIT distribution with local authorities
7. Discuss pupil safety with local education authorities and schools

After the meeting I asked Capt. Hurford if it was possible to obtain a copy of the study. He informed me that because it had been commissioned by the MoD it was unlikely that it would be openly available to the public, although it may be possible to send me photocopies of the overhead slides he had shown.

Capt. Hurford was pleased that the survey appeared to indicate that a large percentage of the public (of those who were surveyed) retained some of the information within the PIRER booklet. I queried how the questions were put in the survey. Were people prompted to give the correct response (by multiple choice options for instance) or did they automatically recall the detail in the PIRER booklet? Capt. Hurford said as far as he was concerned the study had been conducted properly and fairly, but was unable to give details of the methods used.

A city councillor asked if tablets would be later collected if they were delivered to the wrong zones if the wind changed. Dr. Harrison suggested they may be left and perhaps collected later. The councillor then asked if this was the case, why weren't residents pre-distributed tablets now if the health authority trusted them to keep them after an accident. Dr. Harrison said they would probably be collected in. Dr. Harrison said they were happy for residents to ask for their own tablets, the problem was distributing them to non named address'. It was pointed out this had been successfully done over the River Tamar from the nuclear dockyard at Torpoint in Cornwall. Dr. Harrison said this was a different situation (with a different health authority).

DIG asked about advising local schools on nuclear emergency plans as this was opposite to what would happen in a fire drill. In a fire drill, the children

leave the school and assemble in the playground, in a nuclear emergency they would need to shelter. Capt. Hurford said discussions with the local education authority and local authority was planned and it was possible that a specific nuclear emergency school drill could be introduced.

Local school governor, Ken Tucker, described the proposals as "theory with no practice" and questioned the ability of the plans to cope with an emergency at a difficult time, such as in the middle of the night in darkness or poor weather conditions. Would the PIT distributors be available at such a time, would they know exactly where they were going as they would not be local people. He said the plan remained "confused" .

A city councillor said the Navy's information sheet was too complicated and that instructions should be much simpler and clear. The councillor said a lot of people with reading difficulties in that area of Devonport may find reading the sheet too difficult and would not understand what they were meant to do. Capt. Hurford said all the information on the sheet was important and that people would read it. It was suggested that more simpler instructions could be written on the reverse.

A number of questions were asked about potential side effects of PIT's in relation to thyroid problems and asthma sufferers. Dr. Harrison said PIT's would have no effect on asthmatics and even if someone already had thyroid problems, the tablets were short lasting and would do no permanent harm. Capt. Hurford said it was more important that younger people and children should take PIT's as it was not that relevant to older adults. He said any latent cancers would probably show many years after exposure and where this may not be so important in older people, it was with the young.

We asked about the forthcoming Exercise Short Sermon at Faslane and why Devonport was not having such a large exercise. Capt. Hurford said it was purely a rolling programme and Devonport would probably get a big exercise in 1999. We asked about the number of people to be evacuated at Faslane during the exercise - we had heard it was 5000. He confirmed this, but no public were involved, only those who worked or were based at Faslane.

We questioned the plans for distributing tablets to the public when the official advice given is that the Director of Public Health or local authority Chief Executive can only advise taking PIT's when the Emergency Reference Levels were or were likely to be exceeded. This would imply that the distribution of tablets would herald that a serious release was imminent or had happened which could have health implications for the PIT's distributors. Capt. Hurford said PIT's would be distributed before a release and the public would only be instructed to take them if a release actually occurred (this is not the advice given by the Department of Health which states PIT's should be taken 'before' or at the time of an imminent release).

A question was asked about the duration of an emergency and how long residents may have to stay in shelter. Capt. Hurford said between two and twenty-four hours was considered possible before the all clear was given. It was asked if radioactive deposits may still be on the ground particularly if, as Captain Hurford had said, locally produced food would not be considered safe. Capt. Hurford admitted that it was possible that it may not be

advisable to resume 'normal' movement because of the possibility of radioactive deposits on the ground, but that in time it would be washed away by rain.

A city councillor asked about the pre-distribution of PIT's and reminded the Navy and Health Authority that it was the City Councils wish, voted unanimously across party lines, that pre-distribution was their preferred option and added that the Navy and Health Authority should not continue to ignore the City Council's wishes. He hoped the latest plans were in the early stages and that further development would take place. He wondered why the Navy had taken over the nuclear accident emergency planning when the Health Authority had clear and direct responsibility for important aspects of it. Capt. Hurford said that over the years a number of plans for the distribution of PIT's had been put forward, from street collection centres manned by community volunteers to dropping PIT's from helicopters. None had been thought appropriate or workable and so the Navy had stepped in (somehow it took them 20 years!) to undertake the physical delivery of tablets. He said even if everyone had tablets, the Navy would still be under an obligation to deliver tablets on the day of an accident (this seemed to be an assumption of Capt. Hurford's and not a fact).

It was asked why the public were never involved in accident emergency exercises. Capt. Hurford remarked that the advice to the public would be to take shelter and saw little point in asking the local community to do this as part of an exercise. He warned that practising evacuation could cause severe problems and may result in unnecessary injuries and alarm. He said the involvement of the public in such exercises was "totally out of the question".

Kevin Owen DIG  
Oct. 1997