THE VULNERABILITY

OF

BRITISH NUCLEAR FUELS SELLAFIELD PLANTS

TO

TERRORIST ATTACK

CLIENT: GREENPEACE INTERNATIONAL

REPORT REF N^{O} R3074-A2

29 OCTOBER 2001

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Although the basis of this Review is that any reasonably informed person could obtain the information required for the assessment from publicly accessible sources, because of the sensitivity of the issue Large & Associates have sought and agreed with Greenpeace International that the detailed content of this Review will not be openly published, thereby denying any form of assistance to international terrorism

Final Issue 29 October 2001 – Issue 15

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SUMMARY

In September international terrorists targeted the World Trade Center successfully demolishing the Twin Towers which, together with the simultaneous attack on the Pentagon, cost 5,000 or more lives. Instead of using guns and conventional explosives, the terrorists adopted and adapted high technology in the form of directing fully fuelled aircraft towards their targets and, to do this, the individuals comprising each group of hijackers had to give their own lives. It is this demand for mass casualties, in combination with technological prowess and willingness for the ultimate of self-sacrifices that breaks open the hitherto taboo that terrorists will not attack highly hazardous plants.

International terrorism centres around but is not confined to attacks on the United States. Organised terrorism seems to pay no heed to international borders, following the September atrocity active cells of Usama bin Ladin's group, al-Qaida, were unearthed across continental Europe. Terrorism is adopting and adapting technology, the World Trade Center groups trained for months to gain proficiency in piloting the aircraft and in 1995 the apocalyptic Aum Shinrikyo group itself developed and manufactured the chemical agent released into the Tokyo subway, all at great cost using highly skilled technicians. It is perhaps just a short and logical step for the terrorists to latch onto how highly hazardous plants themselves might be triggered into releasing energy and toxins via an aerial attack. And if and when so, could it be that such plants cannot provide a robust defence against an aerial attack and, if so, are there particularly vulnerable parts of the buildings and processes that, if penetrated, could lead to a devastating release of energy and toxins?

The nuclear plants at Sellafield are such highly hazardous plants. The individual plants undertake a variety of processes, some of which involve intensely radioactive materials and highly reactive chemicals. Moreover, being nuclear there is a public perception of dread and fear (ie a fate worse than death) associated with radioactive release. However, to mount an attack on Sellafield the terrorist cell would have to plan ahead, locate the particularly hazardous plants and stores, determine the amount and nature of the radioactive contents and how readily this might be dispersed into the atmosphere, and to identify the most vulnerable aspects of the buildings and containments of the targeted plants.

This Review examines how and by which means those planning such a hypothetical act of terrorism might obtain this sort information. The Review has intentionally confined itself to information and documentation available in the public domain, although it is assumed that those involved would either possess or successfully seek some relatively elementary knowledge of building construction, radioactive materials and substances, reactor fuel, its radioactivity and chemistry.

The outcome of this Review is disturbing. First, it is relatively straightforward to obtain all of the information required by simply accessing publicly available documents – ministries and agencies of central government publish most of these sources of quite detailed information. Second, the requirement that aircraft crash, irrespective of the forecast accident frequency, be accounted for in the regulatory safety case was not introduced until 1979 for nuclear reactors and 1983 for chemical separation and nuclear fuel plants such as those at Sellafield - examples of where the nuclear industry have taken this into account, such as for the Sizewell B PWR, are almost dismissive of the risk solely on the basis that the calculated frequency renders such an accidental event to be entirely incredible and, hence, there may have been little incentive to include for such a remote event in the design. Third, nuclear plants such as Sellafield are almost totally ill-prepared for a terrorist attack from the air – the design and construction of the buildings date from a period of over 50 years, many of the older buildings would just not withstand an aircraft crash and subsequent aviation fuel fire, some buildings, now redundant for the original purpose, have been crudely adapted for storage of large quantities of radioactive materials for which they are clearly unsuited, and the design of the most modern plants on the site does not seem to provide that much defence (in terms of containment surety and segregation of hazardous materials) against an aerial attack.

In conclusion, a terrorist cell charged with attacking Sellafield could readily obtain sufficient information from publicly available documents to identify highly hazardous and vulnerable targets on the Sellafield site for which there exists little defence in depth. If there is a terrorist threat that puts Sellafield and other nuclear sites in the United Kingdom at risk then the government agencies and ministries, and the operators themselves, should immediately review the material that is presently available in the public domain.[f]

Finally, it should be noted that this Review has considered terrorist attack by aircraft crash, a mode of sabotage that was inconceivable just a month or so past. We now know that deliberate aircraft crash has to be defended against but what of the next attack, what shape and form will that take and how will plants like Sellafield be defended against it?

[f] The nuclear regulator in the United State, the NRC, closed down all of its publicly accessible web sites in order to review the content of the web pages shortly following the 11 September incident.