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TRANSCRIPT OF "FILE ON 4" – OIL DEPOT BLASTS

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ACTUALITY – EYEWITNESS AT BUNCEFIELD

MAN: There was an enormous vibration and bang …

WOMAN: I can see flames licking up a hundred feet high. The flames are getting actually larger and larger as I speak to you.

O'HALLORAN: It was the biggest fire in Europe since World War II, and thousands of people who work close to the Buncefield oil depot had a narrow escape, because the huge explosion there happened at six o'clock on a Sunday morning. Dozens of investigators have been combing the site to discover what caused the blast and the blaze that destroyed twenty giant fuel tanks. Firemen complained of being ill-prepared for anything more than a one tank fire, while the oil industry claimed Buncefield was an unheard-of, unprecedented event. However, File on 4 has learned of major oil fires abroad in the past with disturbing similarities to Buncefield. So were the lessons from those events learned in Britain? And at other sites, when big oil companies have been warned by inspectors to improve their safety, how sure can we be that they've made the changes required?

SIGNATURE TUNE

WYATT-LOWE: I heard a very long low rumble and then a huge bang and I just knew that something bad had happened. So I ran outside and went and had a look. I could see a huge glow at the back of the house. And then flames sort of went up in the air. I thought God, I'm sure that that's Buncefield.

O'HALLORAN: Colette Wyatt-Lowe was at home in Hemel Hempstead when the early Sunday morning peace of Hertfordshire was shattered by the Buncefield explosion. She left home at once and drove two miles towards the site.

WYATT-LOWE: It was quite dramatic to see huge factory buildings and office blocks outlined by rolling flame, and we're talking about flames that were 200 feet high with puffs of little fireballs going up.

O'HALLORAN: Along the western edge of the depot are a line of big office blocks that had taken the full force of the blast. In working hours they would have been full of people.

WYATT-LOWE: On a Monday morning at nine o'clock, ten o'clock would have had at least three thousand people in those office blocks. There would have been a serious number of fatalities and a huge number of injuries, because if you can imagine a force that will blow a wall out, blow it through into the building, blow through the building and blow the windows out on the other side, it's hard to imagine how anybody in those offices could have survived the force of such a blast.

O'HALLORAN: So are you thinking Buncefield and Hemel Hempstead came close to a disaster involving scores or hundreds of deaths?

WYATT-LOWE: Yes I do. I think it would have been, if you like, our 9/11, because the office blocks themselves are so close to the site. I just could not foresee how, if they had been occupied, that we could have escaped hundreds of casualties and deaths. There is a grassy area from the back of the office blocks to the first tanks, which

WYATT-LOWE cont: did have trees on it. It now looks like something from Hiroshima, because the trees are there but they're carbonised. They're standing up like black fingers out of the grass, it's very strange.

ACTUALITY AT BUNCEFIELD

O'HALLORAN: The destruction of business buildings here close to the Buncefield oil depot perimeter is like nothing I've seen outside a war zone. A building on one side over there has been reduced just to twisted strips of metal and lagging blowing in the wind. Another huge office block to the other side looks more like a multi-storey car park. Most of what was between the floors has simply been blown away – obliterated.
A joint team from the Health and Safety Executive and the Environment Agency are now investigating what caused the blast and the fire that burned beyond control for three days. The main body representing the on-shore oil industry is the UK Petroleum Industry Association. From the outset, it's insisted the industry's safety record is excellent and that a fire engulfing a series of tanks at such a site was not thought possible. That's why the Association's reaction was one of total surprise, says it's Director General, Chris Hunt.

HUNT: I think firstly it was one of one of initial shock. The risk in terms of UK terminals and up to the Buncefield incident, which was unprecedented, was very good. Generally there was reckoned to be no risk whatsoever from a terminal in terms of major fire or incident.

O'HALLORAN: No risk whatsoever?

HUNT: Well, no risk whatsoever of a, of a …. Buncefield was absolutely unprecedented and we've got to learn the lessons from that.

O'HALLORAN: But just how unprecedented are some aspects of the oil depot fire? Buncefield was not the only near disaster caused by the onshore oil industry in recent years. Ironically, only ten days before Buncefield, the Health and Safety Executive published a report, little noticed by the media, into a major incident which had taken place on Humberside more than four years earlier. It was caused by serious safety lapses at a massive oil refinery.

ACTUALITY AT REFINERY

O'HALLORAN: I'm a few miles north of Grimsby in a landscape crammed with vast metal tanks, tall stacks, and refining columns and a maze of pipework, much of it enveloped in billowing clouds of steam. This is the Conoco-Phillips Humber refinery. It produces about a tenth of Britain's petrol. With businesses dotted along the road here beside the refinery's perimeter and housing only a few hundred meters away, you don't have to be a scientist or an engineer to realise that if corners were cut on safety here, a lot of people could be at risk.

ACTUALITY IN PUB

MAN: It was bank holiday Monday. I was in the pub having a drink, and I just heard a blast, I thought somebody had chucked something through the window, so I ran out the back door to see what the hell had happened, and I seen all the bloody flames and all the smoke, and I ran back in here and my mum was laid on the floor.

O'HALLORAN: Sipping his drink in the public bar of the Cross Keys in South Killingholme, a customer recalls Easter bank holiday, 2001. Many homes in the village were wrecked – as was the holiday itself - by a sudden shockwave which blasted through the area at lunchtime that day.

MAN: The window came through and there was a big lump of it landed on my mum's head. She was in a bad way, so I ran down the road, got my car and we took her to Scunthorpe Hospital. As I was running down to my house, everybody was getting in their cars and getting the hell out of the village. We thought the place was going to go up.

O'HALLORAN: In fact, a large part of the Conoco Humber refinery had gone up. The massive explosion was caused by a leak of fuel which gave rise to a vapour cloud of the kind that is now strongly suspected at Buncefield. A fireball had gone hundreds of feet into the air. The landlady at the Cross Keys, Jan Garbutt, was upstairs at the time. She rushed down to the bars to see what looked like the scene of a bombing.

GARBUTT: There was glass everywhere, huge great big jagged edges of it. Total panic. There was tables and chairs all over the place and it was just total chaos. There was big thick black smoke, and then we started to see big flames coming up and it was more than obvious that the refinery had gone. For weeks and months afterwards, people were clearing up the mess. We had our lives disrupted, not just for the one day, but for the weeks and months afterwards.

O'HALLORAN: What do you think would have happened if it hadn't been a bank holiday, but it had been in working hours on a normal day?

GARBUTT: I hate to think. I think there'd have been a lot more casualties. I think just about everybody on the plant. There are a lot of people work there, possibly a lot of deaths as well.

ACTUALITY AT GRIMSBY CROWN COURT

O'HALLORAN: The huge explosion and fireball at the Humber refinery were followed within six months by a big leak of highly explosive gas, which luckily didn't ignite. Last year, here at Grimsby Crown Court, Conoco-Phillips were fined nearly £900,000 over the two incidents. While their counsel said there'd since been a marked improvement in safety performance at the refinery, the judge in the case said it was only by sheer chance there'd not been a major public disaster.

CLIP OF FLIXBOROUGH BLAST

O'HALLORAN: Memories of a terrible event more than a quarter of a century earlier were revived by the Humber explosion. It took place not so many miles away.

REPORTER: There are houses that are partially demolished. In fact, it does look as if a major bomb disaster has taken place in this tiny South Humberside village. I've seen women walking down the street, covered in blood, their hair still in curlers, men looking afraid and worried. In fact, this is a major disaster.

O'HALLORAN: A quiet Saturday in 1974 shattered by one of the biggest industrial accidents in Britain in the twentieth century. Twenty-eight people killed at Flixborough. Dozens injured. A big industrial plant wiped out. Two thousand homes and shops damaged or destroyed. And a far greater death toll avoided only because it was a weekend. So, to compare the potential of any industrial safety incident with Flixborough is to make a strong statement indeed. All the more shocking then that the image of Flixborough was conjured up by a top Health and Safety Executive official in relation to the Humber refinery blast of 2001. The HSE's investigation pinpointed failure to inspect key areas of pipework for corrosion over twenty years. This was despite the plant being warned that corrosion was a serious danger, says Kevin Allars, Head of the Hazardous Chemical Industries Division at the HSE.

ALLARS: South Killingholme was a very serious incident. Luckily, it happened on the day it did and the people were not there and so there weren't the serious injuries or fatalities that could have been there on another day. It was, and I said it in my forward to the report that was issued on our internet, very very nearly a Flixborough.

O'HALLORAN: It was very nearly a Flixborough disaster?

ALLARS: It was yes. This was a potentially a catastrophic incident and could have been very serious indeed.

O'HALLORAN: So what really happened at South Killingholme and why did it happen?

ALLARS: South Killingholme was really about pipework inspection not actually matching what the plant was actually doing, and not having a systematic means of actually inspection and corrosion monitoring on the site, such that the operators, the way they were operating the plant, were not telling the corrosion and inspection people what they should be looking for and visa versa.

O'HALLORAN: And they weren't inspecting, even though they knew, you are suggesting, that corrosion was a serious risk on those pipes?

ALLARS: There was a lack of communication between the different parts of the company, Conoco-Phillips, so that different parts didn't know the exact way in which that plant was operating and didn't know that the corrosion mechanism was eating away at the pipework.

O'HALLORAN: Since 2001, the company has become Conoco-Phillips. They said in a statement that, since the incident, they have worked closely with the HSE, have acted on lessons learned, and now have a stringent safety regime. But they refused to be interviewed. So I asked Chris Hunt of the UK Petroleum Industry Association for his views on the near disaster at South Killingholme.
The Health and Safety Executive have called that probably the most dangerous event since the Flixborough disaster of 1974. Do you concur with that?

HUNT: I wouldn't comment on the incidents at a particular company.

O'HALLORAN: But that incident at South Killingholme, the Health and Safety Executive had the potential to be catastrophic, so it must have been a big worry to an industry body like yourselves?

HUNT: It certainly was a very serious report, it was acted upon very seriously, certainly by Conoco-Phillips, the company involved, and certainly by the rest of the industry in collaboration with the HSE in reviewing the particular aspects that came from that incident.

O'HALLORAN: Well it's clear from the report, the HSE report, that there were problems, known problems to do with pipework well before that incident, and that the company had not reacted to them fully enough.

HUNT: That was, that was part of the report and part of the lessons learnt, which have been absorbed.

O'HALLORAN: Absorbed at South Killingholme?

HUNT: I think absorbed by the whole industry because the HSE then, as you quite rightly say, produced a report, safety alerts, which would have been acted on by the industry within their own safety management systems, to review. Furthermore, the HSE will have taken that on as an abject lesson when they come in for their regular and thorough inspections of these facilities.

O'HALLORAN: The question of whether an oil company was learning the lessons of previous incidents, accidents and safety warnings was also fundamental to an HSE investigation into events which occurred less than a year before the Humber explosion. This time the company involved was BP, perhaps the best-known company in the British oil industry.

ACTUALITY ON BO'NESS ROAD

O'HALLORAN: I'm on the Bo'ness Road, which runs right through the vast Grangemouth oil and chemicals complex near Falkirk in Scotland. It was on this stretch of road, five and half years ago, that a woman walking her dog was knocked over by the shock of a big pressurised steam pipe suddenly bursting with a powerful blast. She sustained broken ribs - superficially a minor event in the history of oil industry accidents. But it was one of three incidents at the complex within a few days which led to a major health and safety investigation, and a report which revealed safety failures going back twenty-five years.
Within days of the steam line rupture, the refinery suffered a serious fire.

EXTRACT FROM NEWS REPORT

REPORTER: It took more than sixty firefighters six hours to finally extinguish this morning's fire in the refinery area of the complex. No one was hurt, but the fire brigade describes it as serious.

MAN: The flames were very high …

O'HALLORAN: In a long report published two years later, the Health and Safety Executive called the whole approach to safety at Grangemouth into question. It accused the refinery of failing to implement safety recommendations made following incidents as far back as 1975 – a quarter of a century earlier. The report suggested that in the recent fire, the plant – and possibly the neighbourhood - had had a narrow escape, as a dangerous vapour cloud developed, but was dispersed by the weather.

READER IN STUDIO: Under different circumstances this could have led to a vapour cloud explosion, which would have increased the likelihood of fatal injuries and further escalation of the incident.

O'HALLORAN: And again BP was accused of failing to learn lessons from an on-site accident, this time a blast in the previous year.

READER IN STUDIO: Serious operational problems were inadequately dealt with by BP, despite recommendations in writing from the HSE to review the process after the explosion in late 1999. Investigations revealed a number of weaknesses in the safety management systems on-site over a period of time, which contributed to the succession of events which resulted in the fire.

O'HALLORAN: Kevin Allars of the Health and Safety Executive, says the problems at Grangemouth were wide-ranging.

ALLARS: I think the main or key lesson from Grangemouth was that that BP had become much more engrossed in conventional safety slips and trips. The safety culture was wrong, they'd taken their eye off of the major hazard process safety.

O'HALLORAN: Another point in your report on Grangemouth was that lessons and recommendations did not appear to have been implemented going back as much as twenty-five years?

ALLARS: Again that's part of the safety culture, there were lots of inspections and audits and things of that nature being done, lots of recommendations coming from those and they weren't being closed out. And again, the culture was wrong, the culture was about doing the inspections rather than actually closing out the audits and actually making the improvements that were necessary.

O'HALLORAN: Why weren't the Health and Safety inspectors finding that out over that long period of time?

ALLARS: The inspectors were finding those issues out and they were actually addressing that with Grangemouth, but it had got out of hand, there was just too many on such a massive plant to actually make sure that they were being monitored properly and actually safety improvements made.

O'HALLORAN: So Health and Safety officials, in relation to Grangemouth, you're suggesting were fighting a kind of losing battle over the years until the shock of those incidents in 2000 happened?

ALLARS: It's not so much a losing battle, it's just a massive plant, and oil refineries are very very big plants and there are lots of things going on on them.

O'HALLORAN: BP say they've now sold the refinery site. They refused to be interviewed, but admitted they had fallen short on safety there in 2000. They said they then carried out a full safety review and made widespread improvements as a result. So how does Chris Hunt of the UK Petroleum Industry Association explain BP's alleged failure to learn safety lessons going as far back as 1975?

HUNT: That's a specific issue for BP, but certainly on an industry-wide basis we would take those lessons very seriously and make sure that they are disseminated through our membership and are discussed fully between the members and the HSE.

O'HALLORAN: But what you're saying is you learn the lessons routinely, what that report suggested was a major player hadn't learnt the lessons, so how could the industry as a whole have learnt the lessons if that company hadn't - a huge oil industry major?

HUNT: Well certainly the HSE, as part of the findings of that report and subsequent activity, of course, would very much major on that specific area with that company. It would also, through its very rigorous inspection routines, ensure its inspectors are looking for that particular aspect in all other facilities that they inspect.

O'HALLORAN: What reassurance can you give to the residents of Grangemouth today, who are still a bit worried about the oil complex there, some of them, and safety, and perhaps will be more so after Buncefield?

HUNT: Reassurance for the residents around Grangemouth is that BP have spent a lot of money, many millions, in ensuring that their processes now are fully compliant, that their safety methods are fully in line with HSE recommendations. The HSE have been very strong in their enforcement, their inspection regime.

O'HALLORAN: Back in England, the team investigating the cause of the near disaster at Buncefield, is hoping to publish preliminary findings within weeks. Firmly in the frame at Buncefield is a vapour cloud explosion, of the kind that was a serious risk at Grangemouth and which actually happened - causing huge damage - at the Humber refinery. Kevin Allars, of the Health and Safety Executive, says the formation of a vapour cloud is a highly dangerous event.

ALLARS: A vapour cloud explosion is essentially a cloud of vapour - instead of liquid, fuel could actually be liquid and could run out of tanks, run out of anything and be on the floor. If it evaporates essentially it becomes a vapour, like a cloud, and because it's a cloud it spreads further and it's actually easier to ignite than actually the liquid would be.

O'HALLORAN: So this is one thing you really don't want to see anywhere at any oil industry site in the country, a vapour cloud developing?

ALLARS: That's correct, yes.

O'HALLORAN: Can you give us any of the leads being followed by the investigation team so far at Buncefield?

ALLARS: They are looking at vapour cloud explosions, they are looking at liquid explosions, they're looking at fires and they're looking at all the evidence from CCTV and from electronic records from the site. The investigators are looking at all the possibilities of how that fuel got out, including an overfill, and all the alarm systems will be looked at and interrogated as best they can with what is a quite devastated site.

O'HALLORAN: Meanwhile, independent experts have been weighing up the known facts and examining the pictures to come up with their own theories on possible causes. Few can be more experienced than Trevor Kletz, who worked for many years in the chemicals industry, has written many books on oil industry accidents, and is a visiting professor in chemical engineering at universities in Britain and America. He says that at fuel storage sites in the past, there have been numerous cases of tanks being over-filled. If that happens, says Professor Kletz, the fuel can spill from the top of the tank, down its sides and give rise to a large explosive vapour cloud.

KLETZ: Overfilling is a frequent occurrence in the oil and chemical industries.

O'HALLORAN: Over-filling is frequent?

KLETZ: If you look at the number of times in a year which it occurs, it is frequent. I receive several reports of major incidents every year, and there must be many minor incidents where it's stopped in the nick of time and nobody hears about it, apart from the people on the plant.

O'HALLORAN: So is it possible that several times a year, big tanks are over-filled?

KLETZ: It's quite possible, yes. I worked in the chemical industry before I became an academic, and I had direct personal experience of many incidents, and you still see reports of them. Many tanks have been overfilled over the years for a variety of reasons, sometimes because valves are left in the wrong position and liquid has gone into a tank which it shouldn't have gone into. At other times a tank has been fitted with a high level alarm and the operator has relaxed, thinking, well the alarm will tell me if the tank is nearly full, but the alarm is out of order and the tank is overfilled.

O'HALLORAN: Are you satisfied that the lessons of these overfilling tanks, which you've seen cases of year after year, that those lessons have been adequately learned over the years?

KLETZ: Well they've been learnt and then forgotten, I'm afraid.

O'HALLORAN: You mean, because the fuel has been wasted but it hasn't exactly blown up, the alarm bells have not been rung?

KLETZ: That's also the case yes. Every dangerous occurrence should be investigated. If you spill anything flammable, you can't say, well it didn't ignite so don't worry about it, get on with the work - you should investigate it just as thoroughly as if it had caught fire.

O'HALLORAN: Concerned about the risk of spills on hazardous sites, the Health and Safety Executive carried out its own research on leaks of flammable, explosive or toxic substances. It analysed over seven hundred such incidents at industrial sites over more than ten years. It found that in the chemical and petrochemical industries, spills and leaks had been the main factor in a number of major accidents. Some of the leaks were large, running to tons or tens of tons. Ninety of them were from storage vessels or tanks. And of those, nearly a third were caused by overflows. It's not known how many were at oil industry sites. But Kevin Allars, of the Health and Safety Executive, says that when leaks do happen at fuel sites there's a big safety risk.
If you get serious spills, like that report of yours talks about, going on year after year in the UK, doesn't that mean that there was possibly a Buncefield type accident waiting to happen?

ALLARS: I don't think it was waiting to happen, it's a balance of risk and consequences and balancing everything up. What we do is we take the results from that type of work, we work with the industry, we work through our regulations, we work through enforcement to ensure that lessons are learnt and we make sure that we avoid, as best we can, any accident of that type.

O'HALLORAN: Now, in your research, ninety of the incidents looked at were spills from storage vessels, I take it that could include the tanks on oil storage sites?

ALLARS: Yes, it probably did, yes. Inevitably it would have done.

O'HALLORAN: So there have been serious spills from tanks on oil storage depots in the UK in the last twelve to fifteen years?

ALLARS: There have been spills. I wouldn't say they were all serious, but there have been spills, yes.

O'HALLORAN: The company which owns the part of the Buncefield site which is now largely destroyed is Hertfordshire Oil Storage Limited, in which Total UK has a majority stake. It refused our request for an interview but said:

READER IN STUDIO: The Buncefield site was built to all appropriate industry health and safety codes of practice and engineering standards at the time of its construction, and had been fitted with overfill prevention devices and high-level alarms.

O'HALLORAN: The HSE says that of more than a thousand industrial sites classed as posing major hazards, around a hundred are involved in storing significant quantities of fuel in tanks. So what does Chris Hunt of the UK Petroleum Industry Association know about possible spills of fuel at such sites?

HUNT: I was not aware that there are incidents of overfilling of oil storage tanks in terminals. There are incidents of the overfilling of oil storage tanks on commercial premises and there are various codes of practice, regulations, sharing of best practice have gone on in the industry to minimise that.

O'HALLORAN: The Health and Safety Executive have details of a large number of loss of containment accidents over the years, many of them lost from storage vessels or tanks.

HUNT: Without specific reference to the incidents, it would be difficult for me to comment, but we are aware that there have been spillages from oil storage facilities, principally on, for example, retail filling stations or from commercial storage of fuel oil but certainly not from major terminals. But I think to comment further we'd need more detail of precisely the incidents you're referring too.

O'HALLORAN: The detail I'm talking about is in an HSE document precisely on this subject, which was not difficult for us to get hold of.

HUNT: I suspect it would be oil storage on principally retail sites and commercial premises.

O'HALLORAN: Well, I don't think it is retail sites. We're talking about big incidents in which tons of material are sometimes … [Press officer intervenes] As the press officer for the UK Petroleum Industry Association intervened, it became clear we would get no further on that point. The Association have been insistent that the Buncefield fire, engulfing twenty tanks, was a one-off, something totally outside their experience. But what about the rest of the world? We tried to see if the record books really are empty of comparable accidents. In America, the head of a chemical engineering research centre at Texas A and M University, Professor Sam Mannan, told us that, on the contrary, he knew of incidents where there were apparent close parallels with Buncefield. One was a huge fire that erupted in an oil terminal in Newark New Jersey in 1983. Like Buncefield, it happened at a weekend. A huge tank was being filled with petrol, says Professor Mannan.

MANNAN: The initiating event was an overfilling of a particular tank, tank number 67. Around midnight the workers drove around the area where the filling was taking place, not that they suspected anything, but they were out checking equipment and valves, and at that time they discovered that tank number 67 was overflowing from the vent pipes at the top of the tank. The vent pipes are pipes that are on top of the tank to let the tank breathe.

O'HALLORAN: So what was happening? The fuel was actually coming out of the top of the tank and just spilling or flowing down the sides, was it?

MANNAN: That's exactly right, just like if you were filling a glass with water and you overfilled it, the spilling liquid created a large liquid pool first and then, at the same time, it also created the large vapour cloud.

O'HALLORAN: At that point there were series of blasts followed by one gigantic explosion, which it was claimed was heard more than a hundred miles away. Luckily there were no homes close by, and casualties were limited to one dead and twenty-three injured. The fire lasted two days and a number of tanks were destroyed or damaged. The blaze was well beyond the planning of fire crews. Professor Sam Mannan says a significant factor in the spread of the fire may have been the distance between the tanks.

MANNAN: When you have a spill of such a major magnitude and it has already been ignited, it is almost impossible to fight that fire. When you have tanks so close to each other and you have an explosion, release from one tank that could easily cause sympathetic and secondary explosions in other tanks, causing the incident to become much larger. The 1983 New Jersey incident was an eye-opener and wake-up call for the industry that led to changes in safety systems, practices and regulations.

O'HALLORAN: If I understand you correctly, you're saying a huge blast from a vapour cloud explosion, damaging and setting fire to a number of tanks well beyond the fire service's capability, that was a credible scenario a long time before last December 2005.

MANNAN: Absolutely, particularly if the spacing of the tanks is not well thought out.

O'HALLORAN: And you do have a question mark, do you, over the spacing of the tanks in Britain?

MANNAN: In the case of this Buncefield fire, yes, that's one of the things that I would look at if I were in the investigation team.

O'HALLORAN: Professor Mannan says another huge fire at an airport in Denver in 1990 also shows some similarities with Buncefield, with a number of tanks involved and a blaze that lasted for days, beyond the control of fire crews. Another massive fire in the Netherlands in 1968 may also have contained a warning for the onshore oil industry. Dr Tony Cox was working on safety in the Dutch oil industry around that time. Today he's a member of the Health and Safety Commission's Advisory Committee on Dangerous Substances here in Britain. He says that fire, at a Shell plant at Pernis, eventually involved four times as many tanks as at Buncefield. It spread with huge destructive force after a problem developed in one tank.

COX: This particular tank, for some reason something got in there that evolved a lot of vapour, and that vapour travelled away from the tank and it ignited and there was a very heavy explosion, which damaged residential properties nearby, so it was quite a big bang and it also set off a lot of damage to other equipment, which resulted ultimately in eighty storage tanks being burnt down.

O'HALLORAN: Eighty? Eight zero?

COX: Eight zero.

O'HALLORAN: That's a lot of tanks.

COX: That's a lot of tanks. I don't think the explosion necessarily knocked all them out at once. I suspect it may have been the subsequent fire that took out some of those tanks. But I think the initial explosion would have damaged

COX cont: several tanks. That would have set off a very large fire. The fire itself, by that time, would have been way beyond what the systems have been designed to cater for, so that would have been what led to the loss of the majority of the eighty tanks, I think. So it was basically a somewhat comparable incident.

O'HALLORAN: So what do the onshore oil industry in Britain know about previous fires abroad which may be comparable with Buncefield? Chris Hunt of the UK Petroleum Industry Association suggested that it's the refineries that have always been regarded as presenting the bigger risk and that oil storage depots have been seen by the industry as posing far less danger.

HUNT: Certainly on just provisional information and asking around members we feel that the Buncefield incident was probably unprecedented in Europe.

O'HALLORAN: What do you know about the accident at Pernis in the Netherlands in 1968? That was a Shell site where a fire engulfed thirty acres and eighty tanks were destroyed or damaged?

HUNT: Personally I'm not aware of that incident.

O'HALLORAN: And do you know about the Newark, New Jersey incident in January 1983, a huge incident, rather similar to Buncefield?

HUNT: I don't, I'm not aware. I said in Europe we think that Buncefield was fairly unique, but I'm aware in the US there had been, there had been incidents.

O'HALLORAN: You see the big Newark, New Jersey accident of '83 led to tightening of codes of practice. What I'm saying is, were any of those lessons learned here in Britain?

HUNT: I couldn't comment on that.

O'HALLORAN: Do you think it's time to start finding out about that, given the recent Buncefield incident, the biggest fire we're told in Europe since World War II?

HUNT: I'm sure that, as everyone, we await the outcome of the Buncefield incident to find what the lessons were learned and what the clear HSE recommendations are.

O'HALLORAN: But would you agree that, whatever the safety records of this industry in Britain was before, Buncefield has blown a pretty huge hole in it?

HUNT: It certainly has changed the map in terms of terminals and we need to very rapidly learn the lessons from Buncefield and implement the recommendations that emerge.

O'HALLORAN: The Health and Safety Executive said it had not heard of the major Dutch incident when eighty tanks burned. Kevin Allars said the HSE was still looking into which major fires abroad might be relevant to Buncefield.

ALLARS: There have been other incidents in the world that we've looked at since Buncefield, yes.

O'HALLORAN: You've looked at them since Buncefield. The point is, were they looked at before Buncefield by yourselves and by the industry, do you think?

ALLARS: One of them was, one of them was not by HSE. As far as the industry is concerned, I can't speak for the industry as to whether they knew about them both.

O'HALLORAN: So you don't know about the Newark, New Jersey incident of 1983?

ALLARS: We do now. We didn't prior to Buncefield. We've literally only just found out about it. We had a report commissioned several years ago of incidents that had happened, and that one was not included in it. It was a big accident and

ALLARS cont: it appears that a tank was overfilled and there was an explosion, quite a big explosion, and we're finding out more about that now, but we didn't know about that before Buncefield.

O'HALLORAN: So some parallels at least to Buncefield there?

ALLARS: Yes, I have to admit there are some parallels there, and when we found out about it, we're looking at it now to see if there should have been lessons learnt, but we didn't know about it.

O'HALLORAN: The question is, should more be done to monitor events in this worldwide oil industry, to learn the lessons not just from Britain, but in all these other countries, like the United States?

ALLARS: We do normally talk to the United States about incidents, and the industry tell us about their incidents, and I don't know why the one in New Jersey wasn't flagged up to us.

O'HALLORAN: But do you think this question of is there enough space between tanks, is this a fairly fundamental question now?

ALLARS: That is something that we will look at, and the investigation team will firstly look at in the context of Buncefield and whether there's something that needs to be done in the standards for new facilities that will be built.

O'HALLORAN: As well as the design and layout of fuel storage sites, the question of how close homes and offices should be built to them is also clearly on the minds of ministers, with talk of so-called 'exclusion zones' in the future. But the fact that homes and offices are close to existing sites can't rapidly be changed. So it's the fundamental safety of the sites themselves that needs to be rigorously checked and, where required, improved. And, as the incidents we've investigated show, there can be no room for any complacency on the safety record so far.

SIGNATURE TUNE