Yorkshire Evening Post, Monday June 25, 1956
by Robert Chapman

Crisis at Windscale-1

WHEN 'THE THING' EMERGED FROM GIANT A-PILE


When 'The Thing' emerged from giant A-pile

5-ton umbrella was like a machine from Mars

CRISIS AT WINDSCALE—3

Men 'written off' as A-pile battle wages

Here begins the first full story of last year's crisis at Windscale when plutonium workers fought desperately to save the vital plant from total loss

It started as just another day May 3 1955. Sunny but with a sharp Atlantic breeze blowing into the western hills of the Lake District.

The breeze tugged at the white linen coat of Harry Blackburn, the control engineer, as he leaned against the iron railings at Windscale, nonchalantly "fishing" in the green depths of water so radioactive that no fish could live in it.

Blackburn, with his rubber boots and gloves was using remote control gear to examine irradiated uranium cartridges - foot long cylinders of fused greyish looking metal – which had been discharged into a 'pond' from one of the giant atomic furnaces at the plutonium factory.

He was sorting them over on the stone table top under the surface of a shallow bay in the pond. They had been winched out in a train of underwater trucks from beneath the thick walls of the biological shield enclosing No 2 pile which had been temporarily shut down.

He was certainly not expecting anything else to come out in the trucks. Then: "Hallo!" he said. "What the blazes .....?"

Elsewhere in laboratories, workshops, offices and canteens, other men and women were going about their day-to-day jobs. Gethin Davey, works general manager, was at a factory management conference. So was George Ireland, engineering manager. Fred Wykes was writing a report. Bill Pickering was supervising a gang on a welding job.....

Then the telephone range in the office of Ron Gansden, production manager of No. 2 pile, and the day that had begun so normally started to change and to change the days that followed it for everybody on the staff. It brought them closer together in a bond of courage and ingenuity..... the comradeship of the battlefront.

"Can you come over?" It was Blackburn's voice....."We're really landed something today."
"What is it?"
"That's the point. It might be anything. It isn't a cartridge but it did come out of the pile, and I've a shrewd suspicion it wasn't meant to."

'Could be serious'

The thing was lying on the level concrete bank of the pond, which looks like an open-air swimming bath, at the back of the pile building. It had been roped off in accordance with health physics regulations. It was extremely radioactive, but could be approached and even picked up if you wore protective gloves and did not hold it too long.

A thick, oblong piece of metal, roughly 15in x 6in, drilled for bolts, and with a raised centre potion that had been partly sheared off.
"A bracket of some sort," Gansden said slowly. "We'd better have the W.G.M in on this. We must find out where it comes from. It could be serious."
"How do we find that out?" asked Blackburn with a glance at the massive concrete fortress towering above them.

"The drawings should help. The originals from Risley*. Let me know if you catch anything else."
**Risley, Lancs, headquarters of the Atomic Energy Authority's Planning Group.*

Torn from inner wall

The Risley drawings did help. It appears that the bracket had been torn from the inner wall of the biological shield where it had supported a guide rail for one of a series of long, flat tubes, vaguely like organ pipes, moving up and down the discharge face of the pile.
The pipes comprised the scanner gear put in to "sniff" for excess radiation from burst cartridges which might otherwise remain undetected and damage the pile beyond repair.
It was a serious matter. The works general manager stressed the seriousness of it at an emergency meeting that afternoon.

The pile cost more than £2.000.000. It was producing 50 per cent of Britain's output of plutonium for atomic weapons research. Somehow it must be got going again, and as soon as possible, but not before its safety was ensured.

"That," said Davey, "means replacing the bracket if we can, or finding some other means of securing the scanner gear. We can't risk starting it up again unless we are certain the scanner is operating efficiently.
"Besides, if one bracket has fallen off, what about the others? We don't know how extensive the damage may be. The whole thing may be working loose."
"We can check with the periscope, sir."

Frogman idea

Davey nodded. "We'll do that but it won't be enough for a detailed examination. This time we'll have to go in ourselves. Any ideas about that?"

When the two Windscale piles were designed it was thought that once they began operating it would be fatal for people to go anywhere inside the 8ft. thick concrete wall that formed the biological shielding.
All controls were on the outside and although a few small inspection openings were provided, no means of access had been left for maintenance purposes. Over the years, however, more and more had been learned about radiation. Early fears of it, largely associated with the dreadful effects of atomic bombs, had given way to the knowledge that it could be mastered if you went about the job intelligently. In particular it had been discovered that a man could endure a fairly high level of radiation without harm provided he was not exposed to it for long.
"What about diving, sir?" someone suggested. A frogman could get in at the sluice gate and swim along the duct ….."

'Umbrella' vital'

But this suggestion was soon ruled out. It would need more than one frogman. A whole team. And they would need training in atomic engineering before they could help. There wasn't time for that.

Besides, although the water would protect them on the way in, once they came to the pile they would have no shielding from radiation. And there was a major consideration. Whatever repair work was attempted, there would have to be the same sort of 'umbrella' to protect people from the invisible downpour of gamma rays.

"Why not pump the water out of the duct? Then we could all walk in."

It was Wykes who turned in this idea and immediately it began to grow. The underground duct or tunnel was about 200 ft. long from the pond to the biological shield. It could be dammed at the sluice gates and the water pumped over into the pond.

Then a ladder could be let down the inspection chamber and someone could go in for a quick look to assess the damage at close quarters.
An elementary solution. Not when you remember that the water was an essential factor in preventing the escape of dangerous radiation.

Something sensational

The meeting broke up in a mood of high confidence while the idea went on growing and spreading among all who were to be concerned in it. Soon everybody at Windscale, including the canteen staff, clerks and gardeners knew that something sensational was in the air.
"What's up?"
"It's No. 2 pile. It's gone wrong."
"Serious?"
"Dunno, but they're going in."
"What, into the pile?"
"So Whatsisname said."
"Blimey!"
All departments were told to give the job top priority. The broken bracket was consigned to the (…..?) "graveyard to lie for years out of harm's way.

To be continued on Wednesday

Crisis at Windscale 2 - Wednesday 27th June

5-ton Umbrella was like a machine from Mars

First to go in were the health physics men, Hugh Howells and Don Fair. They had put on overalls, rubber gloves and boots and were carrying radiation detectors as if they were nothing more important than lunch boxes.

Now they began to go down the ladder into the tunnel. It was as simple as that. Nobody could have guessed that in a few minutes they would be entering the deadly inner sanctum of a structure that could destroy the human body in a strange and terrifying way – insiduously attacking the tiny cells that make up flesh and blood and bone.

And then they were standing where no man had stood for more than five years, looking up at a dark mountain of graphite with the weird organ pipes of the scanner gear going up more than 100 feet to the summit.

It was like entering an enormous tomb guarded by something infinitely more potent than an ancient curse, voices sounded hollow and re-echoed from remote surfaces in the discharge hold.

Two-minute limit

After the health physics men, Davey the works general manager, followed and Wykes went in. Although they had identified the broken bracket from drawings, it was necessary to find out exactly which one of the 16 had fallen off and from where: and in this they were lucky, it had been one of the lower ones near the entrance to the tunnel, and fortunately this seemed to be the only one affected.

The position was too high up. Too near the radiation maximum, for the (?) bracket to be replaced, but they saw at a glance that something might be devised to serve as well, provided the radiation hazard could be overcome by some sort of temporary shielding.

Even the simplest repair job would take hours to complete, the preparations would certainly take days, and the whole thing would have to be thoroughly rehearsed above ground. However, there was no time to discuss it now. They had already breached the two minute's time limit allotted for inspection.

Most hectic day

For Wykes the rest of the day was the most hectic he had ever spent at the plutonium factory. It seemed to consist entirely of conferences, held in all the most widely separated sites of the vast works area.
"We'll want an umbrella of mild steel, like a big upturned box with doors in the roof. The roof has to be 18ft, by 5ft."
"what thickness?"
"Health physics say two inches. It'll have to be made like a trough, hold 12 inches of water to cut down the radiation still further."
"That's a good idea. It'll lighten the weight on the gantry crane. The water can be poured in afterwards, once the roof's resting on the scaffolding."
"What about communications?"

"Frogmen's intercom sets. Linking three main points: the crane cabin, the construction supervisor in the pile and a control point outside on the roof."

The new fixture to replace the broken bracket was something to be discussed with the drawing office. What was wanted was something in the shape of an "H" made of steel. The upper arms would press gently against the scanner tube while the lower arms were bolted to the inner wail of the biological shield.
The drawing office would also have to dream up a trolley strong enough to carry steel plates weighing nearly five tons, a trolley that must itself be prefabricated and assembled underground.

'That is your worry'

Above all there must be rehearsals to compete with the curious time factor of the operation. Speed was essential. But just how essential Wykes did not realise until his next interview with Health Physics.

"Nobody is to receive more radiation than we get in a fortnight of normal work." said Howells.

"That means a limit of 50 minutes per man in the tunnel. We're going to check you with a stop-watch."

He paused, then went on: "As for inside the pile. Even under the umbrella the time limit will be 25 minutes per man."
"Twenty minutes hardly enough time to get up on to the working platform."
"That" said the Health Physics man cheerfully, "is your worry."

Meanwhile in the drawing office, Bill Pickering and his colleagues were working long hours to produce detailed plans of the umbrella, the steel scaffolding to support it, and the massive iron trolley needed to carry it into the pile.

Most important of all, they had to design the filling to replace the broken bracket and quide rail.

From a rough pencil sketch it had already acquired a shape that had been passed by Davey and Ireland – not as much an "H" now, more like a broad ladder made out of an old bedstead that nobody could straighten out. It was going to be about 12 feet tall and very strong, with rollers at the top to connect with the scanner tube, and brackets lower down to fix it to the wall.

All the drawings were finished by teatime on May 6th, and that night workshops, with Fred Bolton in charge, started working the clock round the shifts.

Like a Martian machine

So the arrangements went on, and on May 10, just a week after No. 2 pile had been shut down for routine discharge, workshops rehearsed the construction of the "umbrella" against a wall in the open

It was not an entirely satisfactory rehearsal. The "umbrella" looked like a machine from Mars with too many legs and none of them quite strong enough. The works general manager and engineering manager came to inspect it.

"Sure it'll hold up?"
"It looks as though it could do with some extra bracing. We can't take any chances."

Extra bracing was added and rehearsals went on in the hope of cutting down the construction time. In fact it wasn't cut down, but there was a confident feeling that the show would go all right on the night.

Cables for additional lights and power tools were led into the area. Telephone lines were laid and checked and tons of materials were brought into the waiting area above ground.

At last, Wykes realised with satisfaction, the operation order he'd eventually managed to publish was yielding results; and this was even more apparent at the final briefing which took place in the canteen.

Every step of the operation was gone through with the visual aid of blackboard sketches. A graph was drawn to show the rise of radiation to its most lethal points at the centre of the discharge face and how it would be cut down by the "umbrella".
"Nobody need be worried about radiation sickness; certainly not of anything more serious. Provided we take care there should not be a single accident of any kind. Any questions?"
There was none.
"Very well, let's go."
To be concluded on Friday……..

The Yorkshire Evening Post, 29th June 1956

Crisis at Windscale -3

Men 'written off' as A-pile battle wages

Robert Chapman concludes the first full story of last year's crisis at Windscale when plutonium workers fought desperately to save the vital plant from total loss.
He has told how a 5-ton steel "umbrella" was built to protect men from deadly radiation as they toiled to replace a bracket that had broken away from the heart of an atom pile.

----"They're going to go in then?"
"It won't be easy."
"Only 25 minutes each. In relays,"
Even so, they have to be quick. What can you do in in 25 minutes? Just about time to get some scaffolding in.
"It'll need dozens of chaps."
"If you ask me there'll be an unholy muddle. Everybody getting in everybody's way."
"Tons of equipment too. How are they all going to get it into the pile?"
That, of course, was not a point that had been overlooked in planning the operation. but it required very careful working out.
In fact a whole train-load of supplies from the massive steel roof of the "umbrella" down to the last nut and bolt was loaded into trucks before anyone set foot through the archway to the pile itself.

Grew alarmingly

As the radiation level in the tunnel was comparatively low, a good deal of preparatory work could be done in 50-minute burst of activity. But it took all day and most of the night and as each working party came off duty they were dismissed from any further part in the proceedings.

Ten men.....20.....40.....60..... the total was already growing alarmingly and so far nothing had been done inside the pile. Then on the morning of May 12th the first gang went in to put up the "umbrella" with the help of the gantry crane.

Men written off

Time went by, too much time. More men were called out and replaced. Again and again it happened. Lunchtime came, then tea-time. It grew dark and every hour valuable men were being written off as "expended" as far as the battle of the Pile was concerned.

But at last it was reported that the scaffolding was up, rising 16ft. from the ankle-deep water, and the roof of the "umbrella" was resting securely on it.
Next the back plate was upended against it and the side plates bolted in position. The working platform was installed with a ladder up to it and water pumped into the roof trough. The radiation was now sufficiently under control for the real repair work to begin.

But already so many men had been used up that it was obvious something had to be done to ensure a supply of reserves. Wykes took the problem to Ireland, the works engineer.

“We can't go on like this, sir. The thing's getting out of hand. The original gangs have nearly all had their turn”.
“That can be taken care of.” Ireland said. “We'll have a call-up system. Every man in Windscale must take his turn if he's needed”.
“They'll be only too glad to.”

Friday the 13th

With that fixed, Wykes felt better. The whole of Windscale was now totally on an emergency footing. (?) were open night and day and most of the men who had received their share of radiation and could no longer help, found it impossible to go home while the crisis lasted. All departments had makeshift sleeping arrangements.
It went on all day on Friday the thirteenth. A continuous stream of men who were checked into the tunnel and out again after 35 minutes at the reactor face.
One hundred and fifty men.....one hundred and seventy five..... two hundred. The total went on rising steadily.

Then the truck containing the “bed stead” fitting was winched along the tunnel and hoisted up under the “umbrella”, its upper arms reaching up between the roof edge and the wall.

The brackets came exactly over the holes bored into the concrete and the work of putting bolts and washers in place was started.

Wykes had arranged his own period as supervisor to coincide with this work. With luck, he thought, he'd be able see see it through to completion. But it seemed only seconds after he had been checked in to the operation area that he was being called back again, having had his full dose of radiation.
Still only the first four bolts had been driven in and there were 24 altogether. Unexpected difficulties had been encountered, first to get the fitting up the wall, then to guide it over the holes and now the bolts themselves were being troublesome.

The unknown factor

Wykes annoyed with himself for throwing away his period of supervision crouched on the reactor roof trying to keep in touch by telephone. Now Pete Davies, his assistant in organising the work, was down there.
“How is it going?”
“Just a moment.....” Davies's voice trailed off ominously. And when, after a long time, he spoke again, there was uneasiness in his tone.
“It doesn't look as if it is going to fit”.
“What!”
Wykes felt perspiration breaking out on his forehead. All that organisation, all that work, all those men, and now.....
“How do you mean? Why won't it fit?”
“The bearing's miles off the scanner. It's about as useful as a broken arm. It's the wall, I think. It isn't plumb.”
That, Wykes thought desperately, was the one unknown factor, the one thing they had been unable to check beforehand. No provision had been made for it and now it was going to ruin the whole job. Ten days, more that that, of concentrated team work. If only he could get in there again.....

“Wait a minute” said Davies, “I've got an idea. It's worth trying anyway.”

Those above ground waited in helpless silent groups. Then: “It's all right.” said Davies cheerfully. “No trouble at all. You can start opening the champagne.”

Afterwards he explained how the difficulty had been overcome. On his instructions the fitters had loosened the lower bolts and nuts and put wedges behind them beteen the “bed stead” and the wall.
This had had the effect of “see sawing” the contraption so that the upper arms moved inwards until the rollers were just resting against the scanner tube.

And that was that. A simple enough matter it seemed now, but to achieve this had taken ten long days and the assistance of 251 men in the deadly heart of the pile