REUTERS/STOYAN NENOV

SHOULD BP NUKE ITS OIL SPILL?

VETERANS OF SOVIET NUCLEAR PROGRAM URGE BP TO CONSIDER NUCLEAR BLAST TO SEAL WELL

JULY 2010

REUTERS

RUSSIAN SCIENTISTS OFFER LAST RESORT SOLUTIONS TO BP'S WORRIES

SPECIAL REPORT

HAPPY TO HELP: Viktor Mikhailov, the former long-time Russian Minister of nuclear energy, June 30, 2010. REUTERS/ALEXANDER NATRUSKIN

- Russian scientists urge BP to use nuclear explosion
- Bill Clinton calls for conventional blast
- Soviet era project dangerous – Rosneft, Greenpeace

BY NASTASSIA ASTRASHEUSKAYA, BEN JUDAH, ALINA SELYUKH

His face wracked by age and his voice rasping after decades of chain-smoking coarse tobacco, the former long-time Russian Minister of nuclear energy and veteran Soviet physicist Viktor Mikhailov knows just how to fix BP's oil leak in the Gulf of Mexico.

"A nuclear explosion over the leak," he says nonchalantly puffing a cigarette as he sits in a conference room at the Institute of Strategic Stability, where he is a director. "I don't know what BP is waiting for, they are wasting their time. Only about 10 kilotons of nuclear explosion capacity and the problem is solved."

SKIMMED OVER: Third officer Neeraj Chaturved looks at the engine room of 'A Whale' skimmer vessel, billed as the world's largest oil skimming vessel, July 1, 2010. REUTERS/SEAN GARDNER

A nuclear fix to the leaking well has been touted online and in the occasional newspaper op-ed for weeks now. Washington has repeatedly dismissed the idea and BP execs say they are not considering an explosion -- nuclear or otherwise. But as a series of efforts to plug the 60,000 barrels of oil a day gushing from the sea floor have failed, talk of an extreme solution refuses to die.

For some, blasting the problem seems the most logical answer in the world. Mikhailov has had a distinguished career in the nuclear field, helping to close a Soviet Union program that used nuclear explosions to seal gas leaks. Ordinarily he's an opponent of nuclear blasts, but he says an underwater explosion in the Gulf of Mexico would not be harmful and could cost no more than $10 million. That compares with the $2.35 billion BP has paid out in cleanup and compensation costs so far. "This option is worth the money," he says.

And it's not just Soviet boffins. Milo Nordyke, one of the masterminds behind U.S. research into peaceful nuclear energy in the 1960s and '70s says a nuclear explosion is a logical last-resort solution for BP and the government. Matthew Simmons, a former energy adviser to U.S. President George W. Bush and the founder of energy investment-banking firm Simmons & Company International, is another calling for the nuclear option.

Even former U.S. President Bill Clinton has voiced support for the idea of an explosion to stem the flow of oil, albeit one using conventional materials rather than nukes.

"IT'S KIND OF LIKE STEPPING ON A GARDEN HOSE... YOU MAY NOT CUT OFF THE FLOW ENTIRELY, BUT IT WOULD GREATLY REDUCE THE FLOW."

"Unless we send the Navy down deep to blow up the well and cover the leak with piles and piles and piles of rock and debris, which may become necessary ... unless we are going to do that, we are dependent on the technical expertise of these people from BP," Clinton told the Fortune/Time/CNN Global Forum in South Africa on June 29.

Clinton was picking up on an idea mooted by Christopher Brownfield in June. Brownfield is a one-time nuclear submarine officer, a veteran of the Iraq war (he volunteered in 2006) and now a nuclear policy researcher at Columbia University.

He is also one of a number of scientists whose theories rely not on nuclear bombs -- he did toy with that thought for a while -- but on conventional explosives that would implode the well and, if not completely plug it with crushed rock, at least bring the flow of oil under control.

"It's kind of like stepping on a garden hose to kink it," Brownfield says. "You may not cut off the flow entirely but it would greatly reduce the flow."

BLASTS FROM THE PAST

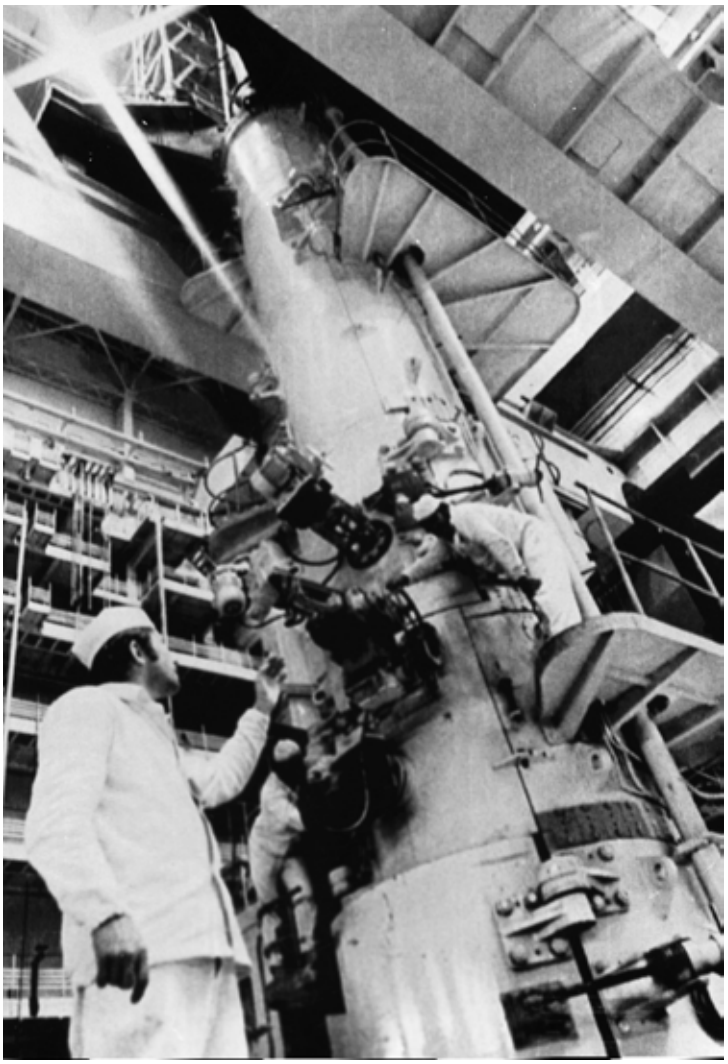
Using nuclear blasts for peaceful ends was a key plank of Cold War policy in both the United States and the Soviet Union. In the middle of last century, both countries were motivated by a desire to soften the image of the era's weapon of choice.

Washington had big plans to use peaceful nuclear explosions to build an additional Panama Canal, carve a path for an inter-state highway through mountains in the Mojave Desert and connect underwater aquifers in Arizona. But the experimental plans were dropped as authorities learned more about the ecological dangers of surface explosions.

The Soviet program, known as Nuclear Explosions for the National Economy, was launched in 1958. The project saw 124 nuclear explosions for such tasks as digging canals and reservoirs, creating underground storage caverns for natural gas and toxic waste, exploiting oil and gas deposits and sealing gas leaks. It was finally mothballed by Mikhail Gorbachev in 1989.

The Soviets first used a nuclear blast to seal a gas leak in 1966. Urtabulak, one of its prized gas-fields in Uzbekistan, had caught fire and raged for three years. Desperate to save the cherished reserves, Yefim Slavsky, then Minister of Light Industry, ordered nuclear engineers to use the most powerful weapon in their arsenal.

"The Minister said, 'Do it. Put it out. Explode it,'" recalls Albert Vasilyev, a young engineer and a rising star in the project who now teaches at the Lenin Technical Institute in Moscow.



DANGEROUS LEGACY: Inside the Soviet nuclear power plant in Chernobyl, Ukraine. The explosion of the plant in 1986 caused catastrophic damage to the region. REUTERS/FILE PHOTO

Vasilyev remembers the technology behind the program with obvious pride. "The explosion takes place deep underground," he says. "We pinch the pipe, break it and the pipe collapses." According to Vasilyev, the blast at Urtabulak sealed the well shut leaving only an empty crater.

JUST DOING A JOB

In all, the Soviets detonated five nuclear devices to seal off runaway gas wells -- succeeding three or four times, depending on who you talk to. "It worked quite well for them," says Nordyke, who authored a detailed account of Soviet explosions in a 2000 paper. "There is no reason to think it wouldn't be fine (for the United States)."

But not everything went smoothly. Vasilyev admits the program "had two misfires". The final blast in 1979 was conducted near the Ukrainian city of Kharkov. "The closest houses were just about 400 meters away," Vasilyev recalls. "So this was ordered to be the weakest of the explosions. Even the buildings and the street lamps survived." Unfortunately, the low capacity of the device failed to seal the well and the gas resurfaced.

Alexander Koldobsky, a fellow nuclear physicist from the Moscow Engineering and Physics Institute, insists the peaceful nuclear explosions were safe. The people who worked on the program "were brilliant professionals", he says. "They had a culture of safety, which did not accept the word 'maybe', but only accepted the words 'obligation' and 'instruction.' Any derivation from these in nuclear technologies is a crime."

Still, he concedes, "there were different scenarios of what happened after an explosion." At his first blast in a Turkmen gas field in 1972, "the stench was unbearable," he says. "And the wind was blowing toward a nearby town." He closes his narrow lips into a smile as if refusing to say more.

Koldobsky shrugs off any suggestion of fear or emotion when the bomb exploded. "I felt nothing. I was just doing my job."

REMEMBER THE RISK: Members of Greenpeace lie on the floor representing victims of the Chernobyl nuclear disaster during a protest in central Madrid, April 26, 2006. REUTERS/STR NEW

UNANSWERED QUESTIONS

Not everybody is so sanguine about the Soviet experience. Speaking on condition of anonymity, an expert from Russia's largest oil exporter Rosneft, urges the United States to ignore calls for the atomic option. "That would bring Chernobyl to America," he says.

"THAT WOULD BRING CHERNOBYL TO AMERICA."

Vladimir Chuprov from Greenpeace's Moscow office is even more insistent that BP not heed the advice of the veteran Soviet physicists. Chuprov disputes the veterans' accounts of the peaceful explosions and says several of the gas leaks reappeared later. "What was praised as a success and a breakthrough by the Soviet Union is in essence a lie," he says. "I would recommend that the international community not listen to the Russians. Especially those of them that offer crazy ideas. Russians are keen on offering things, especially insane things."

Former Minister Mikhailov agrees that the USSR had to give up its program because of problems it presented. "I ended the program because I knew how worthless this all was," he says with a sigh. "Radioactive material was still seeping through cracks in the ground and spreading into the air. It wasn't worth it."

"Still," he says, momentarily hard to see through a cloud of smoke from his cigarettes, "I see no other solution for sealing leaks like the one in the Gulf of Mexico."

The problem, he goes on, is that "Americans just don't know enough about nuclear explosions to solve this problem ... But they should ask us -- we have institutes, we have professionals who can help them solve this. Otherwise BP are just torturing the people and themselves."

RADIATION RISKS

Nordyke too believes the nuclear option should be on the table. After seeing nine U.S. nuclear explosions and standing behind the control board of one, he estimates that a nuclear bomb would have roughly an 80 to 90 percent chance of successfully blocking the oil. According to his estimates, it would have to be an explosion of around 30 kilotons,

equivalent to roughly two Hiroshima bombs or three times as big as Mikhailov's estimate. The explosion would also need to remain at least 3 to 4 miles away from other offshore wells in the area.

The bomb, says Nordyke, would be dropped in a secondary well approximately 60-70 feet away from the leaking shaft. There it would create a large cavity filled with gas. The gas would melt the surrounding rock, crush it and press it into the leaking well to close it shut.

Although the BP well is thousands of feet deeper than those closed in the Soviet Union, Nordyke says the extra depth shouldn't make a difference. He also says that so far below the ground, not much difference exists in onshore or underwater explosions -- even though the latter have never been tried.

ENGULFED: Oil floats on the surface of the Gulf of Mexico around a work boat at the site of the Deepwater Horizon oil spill, June 2, 2010. REUTERS/SEAN GARDNER

Nordyke says fears that radiation could escape after the explosion are unfounded. The hole would be about 8 inches in diameter and, despite the shockwave, the radiation should remain captured. Even in the case of radiation escape, he says, its dispersed effect would be less than that of floating oil patches.

A LAST RESORT

But don't expect an explosion under the Gulf of Mexico any time soon. Even a conventional blast could backfire and cause more problems. There is a chance any blast could fracture the seabed and cause an underground blowout, according to Andy Radford, petroleum engineer and American Petroleum Institute senior policy adviser on offshore issues. The U.S. Department of Energy has no plans to use explosives "due to the obvious risks involved," according to a DOE spokeswoman.

There's also the question of time. Preparations for a nuclear explosion could take up to half-a-year; BP has said it will have a relief well in place to stop the leak by August. "I think it has to be considered as only the last resort," Nordyke says. But "they ought to be thinking about it."

Would he be willing to work on such an operation? "I'd be happy to help," he says.

(Reporting by Nastassia Astrasheuskaya and Ben Judah in Moscow and Alina Selyukh in Washington; editing by Simon Robinson and Sara Ledwith)

COVER PHOTO: An operator carries out technical tests for a possible restart of two Soviet-era nuclear reactors at a control centre in Kozloduy's nuclear plant. January 27, 2009. REUTERS/STOYAN NENOV

FOR MORE INFORMATION CONTACT:
Jim Impoco, Enterprise Editor, Americas
+1 646 223 8923
jim.impoco@thomsonreuters.com

Claudia Parsons, Deputy Enterprise Editor
+1 646 223 6282
claudia.parsons@thomsonreuters.com

Nastassia Astrasheuskaya
+7 495 775 1242
nastassia.astrasheuskaya@thomsonreuters.com

REUTERS