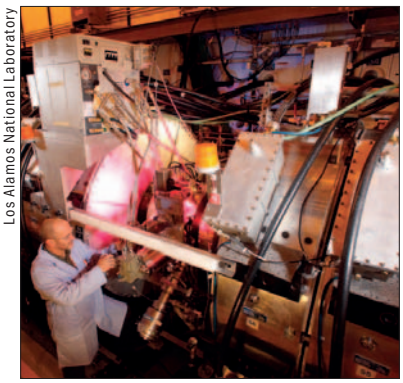
Funding

Los Alamos slashes 11% of workforce as cuts bite

Up to 11% of permanent staff at the Los Alamos National Laboratory in the US are set to lose their jobs following a 12% cut in the lab's budget for 2012. Around 400–800 staff members out of a workforce of 7585 will now face redundancy, with volunteers who have applied for severance packages learning early this month whether their applications have been accepted. The National Nuclear Security Administration (NNSA), which oversees the Los Alamos lab, approved the plan early last month.


Los Alamos National Laboratory

On the line
Up to 800 staff members face redundancy following budget cuts for the Los Alamos National Laboratory.

The job losses follow concerns that the lab's budget problems will not improve in the short term. "In [financial year] 2012 we are down a total of about $300m from 2011's figure of $2.5bn," Charles McMillan, who became director of Los Alamos last July, told *Physics World*. "And the president's budget request for 2013 doesn't look good." The lab has been cutting back on procurements and other spending since November but, according to McMillan, more than 60% of the shortfall is "directly connected to costs of the workforce". He adds that a hiring freeze "won't work", leaving voluntary redundancy as the most prudent option to reduce staff to a level consistent with the proposed 2013 budget.

Together with the US's two other nuclear-weapons laboratories – Lawrence Livermore and Sandia – Los Alamos is responsible for ensuring the safety, security and reliability of the country's nuclear deterrent. Despite the job cuts, McMillan claims that the lab will still be able to maintain its capability and future plans. He also says the lab will not be freezing its postdoc recruitment programme, which he claims is "the largest and most vibrant within the national laboratories". Los Alamos is also excluding from its offer of voluntary redundancy all employees in what it dubs as "essential" categories.

Meanwhile, a report by the National Academies of Science says there is a "broken relationship" between the NNSA and the three US nuclear-weapons laboratories it oversees. The report says this breakdown threatens to erode the quality of scientific research and engineering undertaken by the labs. According to the report, intrusive oversight by the NNSA in response to past security concerns has led to a "breakdown of trust", most prominently at Los Alamos. The three nuclear labs' directors have met with NNSA representatives monthly since last autumn. "We don't solve trust issues by talking about trust but by working together," McMillan says.

Peter Gwynne
Boston, MA

Space

Japanese construction firm unveils ambitious space-elevator vision

A leading Japanese construction firm has announced plans to build a "space elevator" by 2050. The design, which has been in development for more than a year, consists of a 96 000 km-long tether made from carbon nanotubes, which will stretch to one-quarter of the distance to the Moon. Yet while the news from Obayashi Corporation has delighted space enthusiasts, who regard such elevators as an exciting alternative route into space, the proposal is largely aspirational, with major challenges yet to be addressed.

The company has not released the estimated costs of the project, but some independent analysts say it would be around $5–20bn. The proposal envisions an "Earthport" anchor base 400 m in diameter with the tether having a mass of 7000 tonnes, topped by a 125 000 tonne counterweight. Although the location of the anchor base has not yet been determined, Yoji Ishikawa, a manager at Obayashi, says that having it on the equator would maximize the centrifugal force from the spin of the Earth that provides tension in the tether. The company envisages the cable being built by progressively larger, specially designed construction climber "cars" on 500 trips over a period of about 20 years. The cars would then move to the tether's end to form the counterweight.


Space Elevator Visualization Group

Rising high
Obayashi Corporation has announced plans for a "space elevator" that would take people to an altitude of 36 000 km above the Earth.

Once complete, six such cars carrying up to 30 people could then climb the cable at 200 km per hour, taking more than a week to reach a geostationary station at an altitude of 36 000 km. Ishikawa says the space elevator is designed largely around the published work of US physicist Bradley Edwards, who has done extensive calculations on the space-elevator concept over the last decade. "I think we can show technical feasibility regarding the construction," says Ishikawa, but admits the elevator "cannot be realized by one company or one country so we will have to co-operate".

Carbon nanotubes are the only known material that is both strong enough and light enough to serve as an elevator tether, but scientists are still far from being able to weave them into the 1 μm-thin, 1 m-wide material needed for a space elevator. Ishikawa says the company has no plans to independently fund carbon-nanotube research, nor has it figured out how to power the climbers that would ascend the tether. Both issues are long-standing bottlenecks in moving the space-elevator idea beyond the concept stage (see December 2011 pp30–34).

Founded in 1892, Obayashi had sales of ¥1.1 trillion ($13.6bn) in 2011 and has a long history of planning and completing large construction projects. Indeed, it recently built the world's tallest tower, the 634 m Tokyo Sky Tree, which, says Ishikawa, motivated thinking of its "next dream".

David Appell