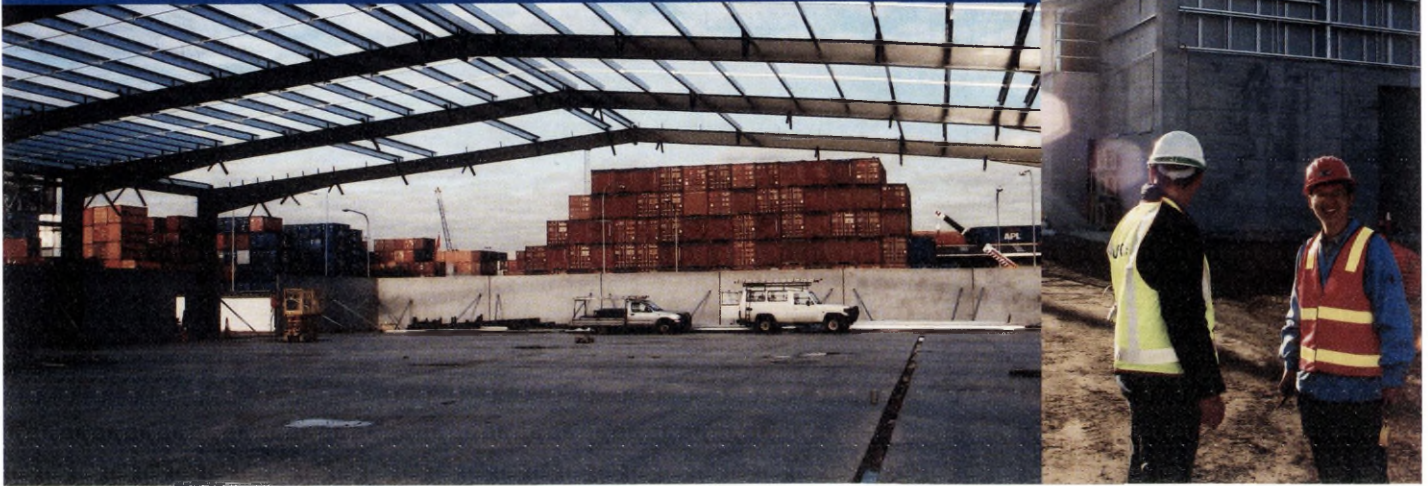


Measuring up

By Catherine McDonald



Customs is facing a unique conundrum as it develops systems to measure the success of its new container x-ray facilities in Brisbane, Sydney, Melbourne and Fremantle.

Just how much smuggling will the new facilities detect, and how will this affect the movement of legitimate cargo across the border?

Customs won't know exactly how many extra incidences of attempted smuggling it will have to investigate until the facilities are fully operational.

Each facility will screen 60 to 100 containers a day. It is estimated that an average of one in ten of these containers will be selected for further examination, based on detected anomalies.

The location of container x-ray facilities at Australia's major ports, in an effort to effectively combat the movement of illicit drugs and prohibited imports such as handguns into Australia, is critical.

The facilities will change Customs operations on wharves. The capacity to detect smuggled goods in containers will improve, as will the detection of imports and exports not complying with Customs requirements such as misreported consignments, revenue evasion or large-scale fraud.

The new facilities offer a 20-fold increase in inspections of containers by limiting the physical handling of the goods through not having to unpack containers. It will take ten

minutes that in the past took hours or even days - offering rapid, safe and non-intrusive verification of a container's contents.

By targeting Melbourne, Sydney, Brisbane and Fremantle, Customs will have introduced an examination capability at ports representing over 90 per cent of the total container volume into and out of Australia. The outcome can only be positive for the community but Customs has in place performance measures to gauge success.

Customs is committed to determining the impact of the new facilities beginning with an extensive post-implementation review undertaken during each facility's three-month rollout. It will assess performance in terms of the efficiency of the logistics processes, detections, impact on industry and the facilitation of trade and safe-handling practices.

Customs performance-measurement process will be dynamic: results will feed into targeting activities creating a continuous improvement cycle.

Construction report

Facilities will be operational in Sydney and Melbourne first. Capital funding of \$9.3m and \$2.8m a year operational costs was allocated to Customs for increased search capacity and purchase of x-ray technology as part of the Federal Government's Tough on Drugs initiative in the May 1999 Budget.

top left: The Melbourne container x-ray examination hall and offices under construction. The 20,000 square metre site is only 2.5km from the waterfront.

top right: Project Manager for the Melbourne container x-ray facility Mick Hardiman and Project Manager for the Nuc Tech installation team, Yan Larry, at the site of the Melbourne facility. Nuc Tech specialists from China visited the site for six weeks during the installation of the THSCAN MB1215 x-ray machine.



The container x-ray scanning hall stands 12.5m high and is 43m deep: in Melbourne the facilities have been built on silt so 25m pylons were sunk into the ground to stabilise the structure.

Construction is near completion in Melbourne. The infrastructure is substantial: the facility spreads over two hectares of the Port of Melbourne, accommodating an x-ray scanning hall and examination hall.

The site within the port environment was chosen for its proximity to container traffic flow. Customs consulted industry to find a transport model with least impact on the logistics chain. A managed transport operation is to be used where one contractor, operating in conjunction with stevedores and Customs, will transport containers between the container terminals and the examination facility.

The managed transport model ensures that the much-needed increase in sea cargo inspections will have minimal impact on the supply chain and be delivered at least cost.

In Sydney, construction began in the first week of August 2002. This facility is expected to be operational about mid-January 2003.

The Federal Budget last year included \$218.1 million for a Protecting Our Borders commitment, of which \$39.8 million over four years was designated to funding the facilities at Brisbane and Fremantle.

The Brisbane site was launched by the Minister for Justice and Customs, Senator Chris Ellison, in June at Fisherman Islands. The groundwork has been completed and construction of the

scanning hall started. Brisbane is expected to be operational from early March 2003. The technology for the container x-ray for the Fremantle facility is still under tender.

Specification report

Customs first three container x-ray systems were bought from Chinese manufacturer Tsinghua Tongfang Nuclear Technology Co. Ltd, now called Nuc Tech.

The THSCAN MB1215 relocatable container x-ray can:

- scan ten 40-foot containers an hour
- penetrate 260mm thick steel
- detect 1.5mm metal wire behind 100mm of steel

Health and safety report

The container x-ray facilities are designed to meet the stringent radiation-safety standards imposed by the Australian Radiation Protection and Nuclear Safety Agency (ARPANSA) and the World Health Organization (WHO) safety standards. Personal-safety issues are of paramount importance to Customs.

Mechanisms have been built into the system to ensure that a person will not be exposed to radiation during the x-ray scanning process.

- Occupants inside the scanning hall must exit before the process begins.
- The driver must enter a waiting room that is locked to protect

against accidental entry into the facility while the x-ray scan is taking place.

- A key must be inserted and turned to the correct position by the responsible operator in order for the beam to be initiated and maintained.
- If any door is opened the beam is terminated.
- Motion detectors automatically bring the x-ray system to a standstill if motion is detected in the scanning hall while the x-ray system is in operation.
- Emergency stopping buttons ensure the x-ray can be stopped at any time.
- Shutdown occurs in less than 0.1 seconds.
- Communication systems including intercoms, telephones, loudspeakers and closed-circuit TV monitors ensure continual communication with, and vision of, the examination facility.
- The walls and doors of the facility are constructed to provide the requisite shielding.
- The shielding is designed for a defined maximum radiation workload.
- If the output rate is exceeded, the x-ray turns off.
- The reinforced concrete walls are 500mm thick and extend to a height of 5.5 metres above floor level.
- The entry and exit portals are provided with radiation-shielding doors.

Each scan requires only a very low dose of radiation, comparable with that received during an extended air flight.

This is because the accelerator is shielded to minimise leakage radiation and the beam geometry is such that scatter is only a fraction of the primary beam.