soon as the engine is started.
A single switch operates the smoke re-moval drill. It is characteristically shaped, for location in smoke, and can only be turned if it is pressed in. The switch can be rotated clockwise to three positions; each de-selects one electric and a non-matching air system. This can save up to 42 separate crew actions when speedy action is impor-tant. "The aim should be to free the crew to negotiate with [air traffic control] and get the aircraft on the ground," says Miller.

QUICK PROGRAMMING
The FMS was quickly programmed. Initially it warned that we would be slightly over maximum landing weight, as only a short route element had been inserted. Take-off weight was 222,260kg, with 97,520kg fuel. The FMS uses this weight as a default value for fuel dumping — which is fully auto-matic after the pilot presses a single guarded switchlight. A second push will normally stop the dumping and there is a further emergency stop switch. Ballast fuel can be carried and identified in the FMS so that this is not dumped.
When start is selected the full-authority digital engine control is initially fed by ground power, but its self-contained power is quickly available. Each engine took 45s to start. When the starter lightswitch is operated the EAD shows the 15% marker on the N3 gauge at which fuel should be selected on and a "lightning" symbol shows that ignition is selected. Blue lines denote the minimum oil and hydraulic levels at start, just as an engineer engineer would note them.

The air-system packs switched off and valves configured as No3 was started, and the APU went to maximum pressure. As the engine stabilised, its generator came on line and a second hydraulic test was carried out on system No 3. The air-system isolation valve then closed, for one pack to feed from the running engine, and APU pressure was ready for starting No 1. APU air is held on No 2 system until the pilot is ready to select engine air supply, then the APU shuts itself down. All things run as if a flight engineer was present.
The EAD's alert panel was clear. The SD aircraft configuration synoptic was briefly checked; it shows brake temperature and tyre pressure as well as flying control positions. Any problem would have been highlighted at the bottom of the EAD.
We taxied to runway 03L at Yuma. Miller deliberately offset the take-off trim and left the flaps up. The centre column of the EAD alert area duly warned of trim and slats and flaps — and warning of spoiler extension was demonstrated. With acceptable selec-tions made the captions disappeared, and two green lines appeared as positive confir-mation that the aircraft was ready for take-off.
The MD-I1 take-off slat extension is the

same as that for landing where the DC-10 has a middle position for take-off. The useful Douglas "dial a flap" function for take-off is fitted. Groundspeed showed on the PFD — clear and large in my peripheral vision as I slowed from 15kt to 8kt for a 120° turn onto the parallel taxiway.
The autoflight engage bar was pressed. As the aircraft was on the ground the system automatically anticipated taking off; the flight director was armed and the autothrot-tle clamped, ready for the reduced take-off power setting entered in the FMS for 50°C. Red-line thrust is available at any time by

thrusting the levers forward through a 13.5kg bar restraint.
There is no separate thrust selection panel. "Douglas is proud to have invented the thrust-rating computer — now we are the first to uninvent it," says Miller. The thrust system knows what is required from the FMS. The pilot can alter thrust through the MCDU; target Nj is then displayed on the EAD in white instead of magenta — a colour convention followed for any figure not determined by a system, but by data entry.
I held the aircraft on the brakes. The