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Prime Minister

Patrick Jenkin's response
to your request for more
information. You will also
want to see the Chancellor's
minute in this folder.

WR
26/11

PRIME MINISTER

INMOS

As requested in your Private Secretary's letter of 25 November, I
enclose a paper which compares successive financial and
employment forecasts for INMOS with current forecasts and
outturns, by way of additional background material for the
discussion now planned for Monday 29 November.

2 The attached paper provides a detailed commentary on the
tables at Annexes A - E. May I suggest that we should bear in
mind three more general considerations?

i Insofar as the historic forecasts and the comparison
with the present position of the company provide any guide
for the decisions we now need to make, the comparison
between 1980 and the present position is the more useful.
This is partly because the 1980 Plan formed the basis of
this Government's decision to make available the second £25
million to INMOS in July 1980. More significantly, the
strategy outlined in INMOS' original 1978 Plan was still
very broadbrush, whereas by 1980 the company had a clearly
defined strategy for introducing various families of
products.



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ii The comparison between the 1980 Plan and outturn or latest projection for product introductions, sales, profits, and employment all broadly indicate that the 1980 projections should be achieved but with a slippage of about a year. Compare for instance, the sales figures in the 1980 line of the upper table of Annex B with the 1982 line 1 year later. I am sure we must acknowledge that part of the slippage was due to the delay in 1980 while the Government considered the case for the release of the second £25 million; and part to the current hold-up in the build-up of employment and production at Newport due to the present borrowing ceiling. I believe Nicholas Edwards has explained that the build-up of production at the plant had to be stopped last July.

iii While these historic comparisons are of some help in judging the credibility of the company's present projections, our decision must surely be based on a well-informed view of the company's present position, and the realistic options now open to us.

3 I am sending copies of this minute and attachments to Geoffrey Howe, Nicholas Edwards, and to Dr Nicholson.

JRS

MP P J

26 November 1982
(Approved by the Secretary of State and signed in his absence)



INMOS

1 This note compares the key financial and employment forecasts which INMOS has made in its five Corporate Plans with outturn figures for 1979-1981 and with the latest forecasts available now.

INMOS Products

2 The starting point for an analysis of how INMOS has performed against its various Plans is its record in bringing its products to the market. The employment and financial figures flow from this.

3 In 1978 when it was set up as a greenfield operation INMOS' product strategy was still largely undefined, although the company had identified the two key products on which design was to start immediately - the 16K Static RAM (1400) and the 64K Dynamic RAM (2600). The 1978 prediction was that both products would be introduced and be yielding income in 1980. ⁽¹⁾ In 1979 it was forecast that the 16K would be launched in October 1980 and the 64K in March 1981. In the event the ⁽²⁾ 16K was introduced in November 1980 although it did not start yielding income until 1981. It has proved an outstandingly successful product, accounting for the bulk of INMOS' £2.5-£3m a month sales, and commands 75% of the world market for this type of chip. It is the sole source for a number of US military applications, commanding premium prices of up to \$200 per chip.

4 The 64K product however was delayed longer. Fearing very intensive competition and a sharp drop in prices, INMOS modified its original plan and decided to go for a higher performance chip, more sophisticated both in terms of speed and other special features.

5 By the time the second tranche of £25 million was approved in 1980, the company had a clearly defined strategy for expanding the 16K and 64K families of products and the development of new product families including the transputer

Annex A

at Bristol. It has adhered closely to this since then. The table at Annex A compares its plans for product introductions in that year with subsequent and current forecasts.

6 The table shows there was further slippage with the 64K product. After completing the new design, INMOS experienced difficulties over the production process and in particular in getting adequate yields to make a viable operation. The other leading manufacturers in the event experienced very similar problems. The technical leader of LSI products, Intel, was forced to withdraw from this market. Only Hitachi is producing an effective 64K DRAM in volume.

7 The INMOS 64K product has now been introduced with initial yields exceeding INMOS' expectations. Technical consultants rate its design as superior to Hitachi's. There is no faster dynamic RAM on offer; its only equal (from Fujitsu) is a copy. The challenge is to transfer production from Colorado to Newport and to manufacture the product there in increasing volume through 1983 and 1984 with acceptable yields. - who?

Financial Forecasts

8 Although the 64K has not been the only product to experience delay - INMOS has also had problems with its family of EEPROMs - it was the cornerstone of what was expected to be INMOS' present business. Its one year slippage since 1980 is the main reason why INMOS has not met its financial and employment forecasts. External factors such as the recession, particularly in the US, and the fall in sterling have exacerbated the situation. The table at Annex B compares the sales and profit forecasts in INMOS' five Corporate Plans from 1978 to 1982 and shows the latest projections through to 1985. This shows the financial effect of the one year slippage, with outturn and current forecasts keeping step with the 1980 forecasts one year behind. It is particularly worth noting that 1982 outturn results match the 1981 forecasts. This shows the slippage occurred between 1980 and 1981 when INMOS had to get back on track after the delay in approving the second £25 million.

Annex B



Annex C
Annex D

9 So far as INMOS' cash requirements are concerned the various projections set out at Annex C and the graph at Annex D show that INMOS has stayed very close to target. The figures also reveal how sensitive the £35.3m borrowing ceiling set in 1980 has always been to changes in the dollar-sterling exchange rate. In the 1980 Plan the forecast borrowings in 1983 were £34.6m; but this was at an exchange rate of £2=£. Since INMOS has liabilities in dollars of over £80m (its equipment has to be paid for in dollars) the effect of the fall in the exchange rate from £2 to £1.6=£ is in itself about £10m. In practice until last week's fall outturn cash requirements for this year were estimated to be lower than in the 1980 Plan, although admittedly much of the requirement forecast then would have been to provide working capital to support the £45m sales which INMOS was expected to achieve.

10. Put very simply, INMOS has found it more difficult than it expected to get its products right for the market. It has not been alone in this. Its financial performance reflects the fact that the investment in R & D it has had to make in order to establish a series of products has taken longer to start yielding a return than was forecast both in 1978 and in 1980. Only this year has it begun to generate a substantial income. Without products to sell, its plans for additional factories had to be put back and it could only have afforded to pay for these in any case, out of retained earnings or by attracting new capital into the company. The company is now forecasting to break even in the final quarter of 1983 instead of the end of 1982 which it forecast in the 1980 Long Range Plan.

Employment Forecasts

11 Since 1980, the employment forecasts also show a slippage of about one year. The detailed figures in successive Corporate Plans are at Annex E.

Annex E



12 The assumptions which have been made on the opening of new factories are critical to an understanding of the figures. There was considerable change in INMOS' thinking between 1978 and 1980, as the process technology and its own product strategy evolved. By 1980 INMOS had concluded the optimum size for each fabrication plant was about 1000 people.

13 When the Prime Minister announced the second £25 million in July 1980, employment in the UK was forecast to rise to 2039 in 1984 and 2699 in 1985. The briefing which the Department provided the Prime Minister with at the time may not have made it sufficiently clear that these figures included not only employment at the Newport factory but also at the second UK fabrication plant which was then due to open in 1983. It also included the design team at Bristol. The 2000 figure for 1984, which the Prime Minister quoted in the House, covered the 1000 workforce in Newport, the 200 design staff in Bristol as well as a workforce at the second UK plant which would have built up to 800.

14 The construction of this second fabrication plant in the UK was dependent on INMOS having achieved the sales needed to justify increased production and the revenue to meet the cost of the facilities. It was also the expectation that INMOS would need additional capital by about 1984 in order to underpin its future growth; and the intention since 1980 has been that this should come from the private sector.

15 There is no fundamental change in the situation. As a result of the ~~delay on the 64k,~~ INMOS' employment at Newport is a year behind schedule, even though the plant itself was ready at the same time as forecast in 1980 and for roughly the same capital cost. Next year's forecast headcount in the UK matches the 1982 forecast in the 1980 Plan. If the labour element for the second UK plant is excluded, the same pattern emerges in the following year. In other words, leaving aside



the question of the second plant, the headcount is following the sales pattern - ie one year behind the projection made in 1980.

16 INMOS has not abandoned its plan for a second UK plant. The latest sales forecasts for 1985 which are shown in Annex B assume that a second production plant will open in the UK in that year. This is reflected in the final column of Annex E. And it remains the case that the construction of a second plant is dependent on private capital being made available for the purpose.

17 Of course, the figures do not match precisely. The steady improvements in plant efficiency which are characteristic of this industry mean that headcount forecasts will always tend to drift downwards with the passage of time.

INMOS - PRODUCTION INTRODUCTIONS

Introduction Date				
Product Number	Type	1980 LRP	1982 LRP	Current Best Estimate
1400	16K x 1 SRAM	Q4 1980	Q4 80 Actual	-
1420	4K x 4 SRAM	Q3 1981	Q3 81 Actual	-
1600	64K x 1 SRAM	Q2 1983	Q3 1983	Q1 1984
1620	16K x 4 SRAM	Q2 1983	Q2 1983	Q1 1984
2600	64K x 1 DRAM	Q3 1981	Q3 1982	Q3 1982
2620	16K x 4 DRAM	Not forecast	Q1 1983	Q1 1983
2630	8K x 8 DRAM	Q2 1982	Q4 1982	Q1 1983
2601	64K x 1 DRAM	Q2 1983	Q3 1983	Q1 1984
3630	8K x 8 EEPROM	Q1 1982	Q1 1983	Q2 1983
3730	16K x 8 EEPROM	Q2 1984	Not forecast	
2800	256K x 1 DRAM	Q2 1984	Q1 1984	Q4 1984
2820	64K x 4 DRAM	Not forecast	Q1 1984	Q3 1984
Transputer				
Product 1	-	Q2 1982	Q4 1983	Q4 1983?
Peripheral 1	-	Q2 1983	Q4 1983	Not forecast
Product 2	-	Q2 1984	Not forecast	Not forecast
Peripheral 2	-	Q4 1984	Not forecast	Not forecast

SALES AND PROFIT FORECASTS IN
INMOS' CORPORATE PLANS

SALES	Year							£m
Plan	79	80	81	82	83	84	85	
1978)	-	6	25	60	89	119	-	
1979) \$2=£		0.3	10	57	102	146	-	
1980)			9	45	99	146	195	
1981) \$2=£				15	63	124	-	
1982) \$1.85=£				15	43	96	141	
Outturn	-	-	2	16 ⁺				

+ latest estimate

The diagonal arrows in this and other annexes demonstrate the one year slippage between the projections made in 1980 and the latest 1982 projections.

PROFIT (before interest and tax)	Year							£m
Plan	79	80	81	82	83	84	85	
1978)	(9)	(7)	(4)	6	9	11	-	
1979) \$2=£	(3)	(8)	(10)	7	19	31	-	
1980) \$2=£		(8.4)	(8)	4	24	35	48	
1981)				(15)	8	29	-	
1982) \$1.85=£				(16)	(2)	21	31	
Outturn	(2.5)	(8)	(16)	(17) ⁺				

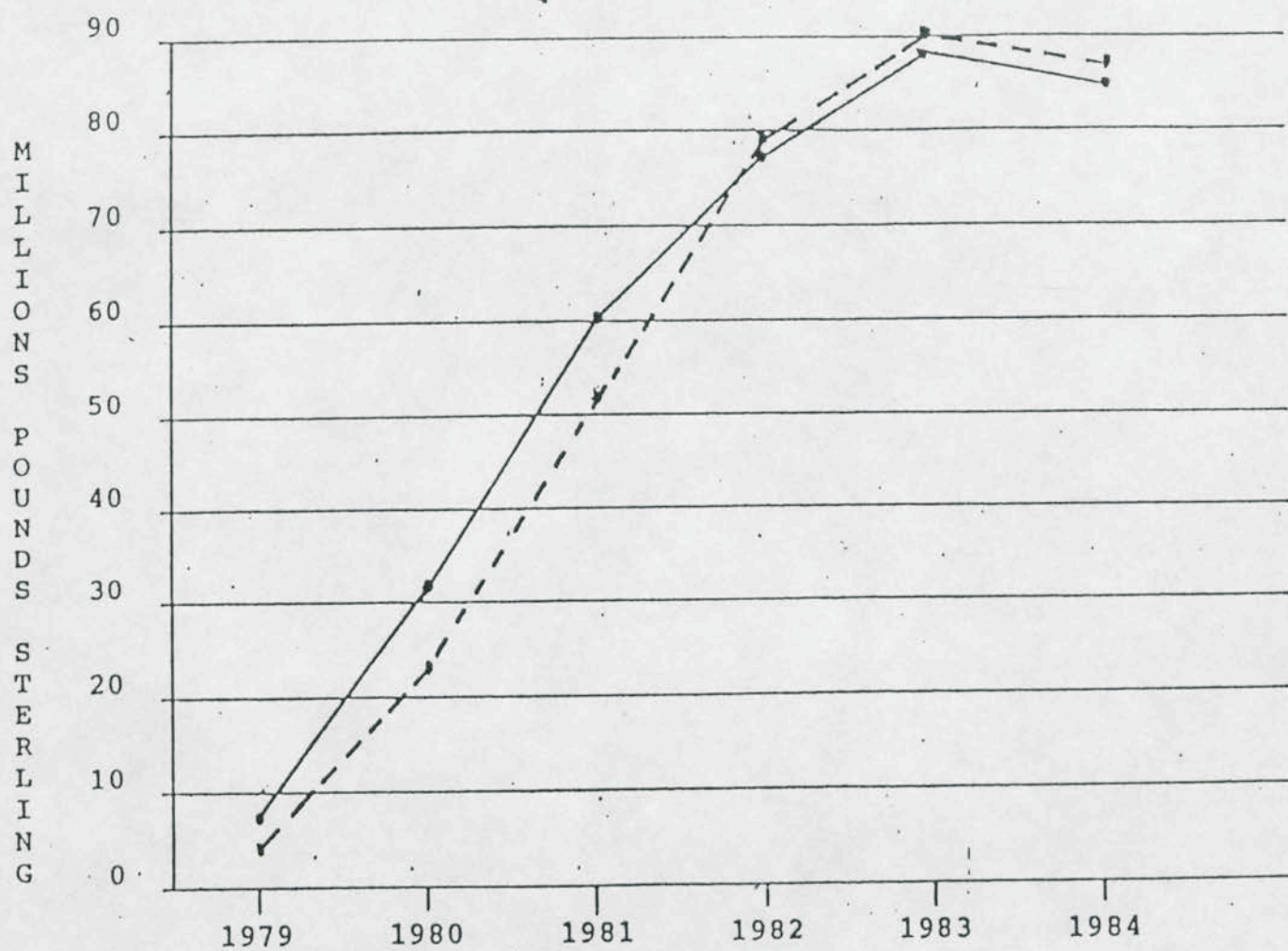
+ latest estimate

INMOS CASH REQUIREMENTS

£m

	<u>79</u>	<u>80</u>	<u>81</u>	1978 Plan (\$2:£)		<u>83</u>	<u>84</u>	<u>85</u>	<u>86</u>	<u>87</u>
Total	25	41	60	<u>82</u>	71	73	77			
				1979 Plan (\$2:£)						
Equity	8.1	30.0	50.2	<u>50.2</u>	50.2	50.2	50.2			
Debt (cash)			<u>8.7</u>	<u>21.2</u>	<u>23.5</u>	<u>12.2</u>				
Total	8.1	30.0	58.9	71.4	73.7	62.4				
				1980 Plan (\$2:£)						
Equity		29.7	50.2	<u>50.2</u>	50.2	75.2	75.2			
Grants					8.5	11.0	9.1			
Debt (Cash)		<u>5.9</u>	<u>(1.0)</u>	<u>29.5</u>	<u>34.6</u>	<u>20.0</u>	<u>10.2</u>			
Total		35.6	49.2	79.7	93.3	106.2	94.5			
				1981 Plan (\$2:£)						
Equity				<u>49.7</u>	49.7	49.7	74.4	74.4		
Grants				4.2	6.9	6.2	5.4	4.2		
Debt Cash				<u>28.7</u>	<u>31.1</u>	<u>24.9</u>	<u>9.9</u>	<u>9.7</u>		
Total				82.6	87.7	80.8	89.7	88.8		
				1982 Plan (\$1.85:£)						
		<u>Outturn</u>								
Equity	8.6	29.7	50.2	<u>50.2</u>	50.2	50.2	75.2	75.2	75.2	
Grants		0.3	2.6	7.1	6.9	8.6	7.3	5.9	4.5	
Debt (Cash)	<u>(3.6)</u>	<u>(7.4)</u>	<u>1.3</u>	<u>27.5</u>	<u>39.6</u>	<u>36.9</u>	<u>17.5</u>	<u>16.3</u>	<u>22.9</u>	
Total	5.0	22.6	54.1	84.8	96.7	95.7	100.0	97.4	102.6	

INMOS INTERNATIONAL
79 LRP TO 82 LRP
TOTAL FINANCING LESS CASH
AT YEAR END



————— 79 LRP (EXCHANGE RATE 2.00)
----- 82 LRP (EXCHANGE RATE 1.85)

INMOS: HEADCOUNT

PLAN YEAR ⁺	1979		1980		1981		1982		1983		1984		1985	
	US	UK	US	UK	US	UK	US	UK	US	UK	US	UK	US	UK
1978 Plan (US1 - Q2 1980) (UK1 - Q2 1981) (UK2 - Q2 1983)	215	70	585	350	605	1440	670	2560	710	3700	760	4820		
1979 Plan (US1 - Q1 1981) (UK1 - Q4 1981) (UK2 - Q2 1983)	117	60	532	305	1065	889	1071	1504	1366	2503	1463	3187		
1980 Plan (US1 - Nov 1980) (UK1 - Feb 1982) (UK2 - Nov 1983) (UK3 - May 1985)					846	117	1037	742	1242	1464	1335	2039	1467	2699
1981 Plan (US1 - operational) (UK1 - Feb 1982)							892	533	1162	910	1312	1330		
1982 Plan (US1 - operational) (UK1 - operational) (UK2 - 1985) (UK3 - 1987)							719	359	988	593	1188	966		
Outlook/latest forecasts*	82	53	227	64	643	114	681	293	820	750	1000	1200	1000	1800

+ The assumptions on factory opening on which these headcount forecasts were based are summarised for each plan. US1 means the Colorado Springs factory; UK1 the Newport factory, UK2 the second projected factory in the UK etc.

* The latest forecasts assume the opening of UK2 in 1985

PRIME MINISTER

You may find it helpful to have these figures in front of you at the meeting this afternoon.

	<u>Sales</u>	<u>Profit</u>	<u>Cash required</u>	<u>UK emp.</u>
1978 Plan	£60m	£6m	£71m	2560
1980 Plan	£45m	£4m	£79.7m	742
Outturn/latest plan	£16m	£-17m	£84.8m	293

Mus.

29 November 1982