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Ref. A083/3533

PRIME MINISTER

Withstanding a Strike in the Gas Industry

--- I attach a report by the Official Group (MISC 98) on withstanding a strike in the gas industry. This is the last in the series of reports on withstanding strikes in key industries. The others have dealt with coal, electricity supply, water, telecommunications, the docks and oil tanker drivers, and there was a separate exercise on the lessons of the 1981 Civil Service dispute.

2. The conclusions and recommendations are in the final section (Section V) of the report. The points emerging of particular significance (paragraph 5.10) are as follows:

i. the risk of industrial action is most likely to arise in relation to proposals to privatise the gas industry, depending on the extent to which the existing structure is likely to be broken up, the lead given by top management, and the perceived implications for job security and work practices;

ii. the co-operation of higher management is crucial; as the recent formation of the Gas Higher Management Association has shown many of them are opposed to industrial action; if they continue to co-operate, any industrial action will be significantly less effective; per contra some extreme forms of action by higher management in association with some key staff could bring about the total and immediate cessation of gas supply;

iii. it is difficult for technical and safety reasons to cut off gas supply short of the customer's meter, although some parts of the district distribution system could be cut off as a last resort; the BGC's employees will probably be reluctant to place the safety of the community in jeopardy and thus forfeit public sympathy; therefore,

depending on the workers' perception of the safety risks involved, there is some prospect that disruption of supply short of the customer's meter might be limited or, at worst patchy; if, as is not thought probable, the workers did take an irresponsible attitude to safety the consequences would be severe;

iv. if industrial action were to be largely confined to the non-repair of leaks on the customer's side of the meter (which could be remedied by cutting off supply at the meter or by the customer's getting the leak repaired by a private contractor) only a small percentage of domestic consumers would be affected and it should be possible to withstand industrial action for many weeks.

3. The Group's main recommendations (paragraph 5.11) are therefore as follows:

i. in considering possible forms of privatisation for the gas industry, it will be desirable to weigh, alongside all the other relevant factors, the extent to which some forms of privatisation may substantially increase the risks of industrial action;

ii. the attitudes of higher management and their key staff will be crucial and it will clearly be important to make every effort to win their support for, or acquiescence in, whatever proposed form of privatisation Ministers may decide on;

iii. in the event of industrial action both the Government and the top management of the BGC would need to exploit fully the likely reluctance of the workforce to be seen to be endangering the safety of the community, as this could limit industrial action to a scale and type which could be endured for many weeks.

4. There are also two detailed recommendations for further work in paragraph 5.12, one concerning priorities for essential gas consumers and the other about possible provision of Service assistance with the maintenance of compressor stations in the national transmission system.

5. Ministers may also wish to note that a proposed new tax protocol could increase the risks of disruption of supply from the Anglo-Norwegian Frigg Field, but that these risks would be carefully weighed and brought to the attention of Ministers before a decision was taken to bring the new protocol into force.

6. Unless there are points which you or the other Ministers receiving copies of this report wish to discuss, you will probably conclude that there is no need for a meeting of Ministers to consider the report and that it will be sufficient for the time being for Ministers to take note of the conclusions and main recommendations. The most appropriate time to consider the main recommendations at i. and ii. in paragraph 3 above will be when Ministers consider possible forms of privatisation for the industry and the handling with the BGC and its workforce of whatever proposals Ministers decide on. The main recommendation at iii. in paragraph 3 will need to be kept in mind in the event of industrial action. It would however be helpful if Ministers were to endorse now the two detailed recommendations about priority consumers and Service assistance for the maintenance of the compressor stations.

7. I am sending copies of this minute and the attached report to the Home Secretary, the Chancellor of the Exchequer and the Secretaries of State for Energy, Defence, Scotland, Trade and Industry and Employment, with the request that these papers should be seen only by those in their Departments who have already participated in the work of the Official Group (MISC 98) or who are specifically authorised by their Minister to see them for the purposes of giving essential advice.

RA

ROBERT ARMSTRONG

21 December 1983

SECRET AND PERSONAL

HL

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10 DOWNING STREET

From the Private Secretary

SIR ROBERT ARMSTRONG

Strikes in the gas industry

The Prime Minister was grateful for your minute of 21 December, to which was attached a report by MISC 98 on withstanding a strike in the gas industry.

The Prime Minister agrees that there is no need at present for a meeting of Ministers to consider the report, and she has taken note of its contents. She agrees with the two detailed recommendations in paragraph 5.12 about priority consumers and Service assistance for the maintenance of compressor stations.

I am sending copies of this minute to the Private Secretaries to the recipients of yours.

David Barclay

30 December 1983

SECRET AND PERSONAL

SECRET

21 December 1983

17

MR TURNBULL

MISC 98: WITHSTANDING A STRIKE IN THE GAS INDUSTRY

The important conclusion of this report is the somewhat surprising resilience of the gas system to industrial action.

The effects of any industrial action are likely to be limited, despite the widespread use of gas by all sectors of the community and the common perceptions that safety issues make the gas industry more vulnerable than most.

The Reasons

The terminals can be kept in operation with the co-operation of higher management and less than ten key workers. These are likely to be available.

The national transmission system can be kept going with the co-operation of higher management and a small number of skilled men. The latter can be substituted, if necessary, by personnel from the equipment manufacturers or from the Services.

The distribution system would be vulnerable to the loss of labour for the repair of leaks and essential maintenance. However, 90 per cent of leaks occur on the customer's side of the meter, and could be repaired by non-BGC contract labour.

Leaks in the distribution system on the supply side of the meter are likely to be repaired, at least temporarily, for safety reasons. As a last resort, BGC may have to shut off supplies to whole districts (perhaps 5-10,000 consumers) although this is not likely to be a widespread occurrence.

The Implications

(a) Privatisation - the risk of industrial action is most likely to arise on proposals to privatise the industry, particularly if the existing structure is broken up. The Department of Energy are likely to use this conclusion as an argument against restructuring.

We take the opposite view.

SECRET

If the system is largely resilient to industrial action, we should not be deterred from implementing the most sensible privatisation proposals, irrespective of any threats of industrial action. Sensible proposals should also have the support of higher management.

(b) Pay - a similar conclusion applies towards our approach to future pay rounds.

(c) Strikes in Essential Services - the ability to withstand a strike in the gas industry, in the water industry and - to a lesser extent - in the electricity industry, means that our vulnerability to strikes in the "industrial" essential services is less than we previously thought.

This conclusion is likely to affect our thinking on legislation on essential services. If maintaining continuity of supply is not a major consideration, we have a better political opportunity to introduce desirable industrial relations procedures. Having established this bridgehead in essential services, we could extend these to all industries at a later opportunity.

We should also draw a distinction between "industrial" and "social" essential services. The impact of industrial action on the latter - eg fire, health services - is likely to be greater than on gas, water and electricity. However, the moral pressures upon the work forces not to jeopardise significantly the services to the public will be high.

We suggest that the Policy Unit could pass these thoughts on to Tom King as they alter some of our current perceptions about legislation for essential services.

DLP.

DAVID PASCALL

~~TOP~~ SECRET

Prime Minister

15A

It looks as though you did not have time to look all the way through this.

AT 22/12

PRIME MINISTER

This report reaches the unexpected conclusion that the effects of a gas workers strike are likely to be limited. This is explained in the conclusions beginning on page 26.

A privatisation involving restructuring is thought to be the most likely cause of a strike. Mr. Walker may use this as an argument for doing it without restructuring. The Policy Unit draw the opposite conclusion. If the gas industry is not very vulnerable to a strike then we should not shrink from desirable measures to increase competition.

For the time being you are simply invited to take note though consent is sought for the two detailed recommendations in paragraph 5.12.

Agree?

Yes pp

Derek Clark

P.P. A.T.

21 December 1983

WITHSTANDING A STRIKE IN THE GAS INDUSTRY

I INTRODUCTION

1.1 This report considers possible industrial action in the gas industry. Gas supplied by the British Gas Corporation (BGC) is used in over 15 million households and accounts for about half of the national domestic fuel supply for heating and cooking. Gas accounts for some 21 per cent of the UK's primary energy needs, and just over 30 per cent of all industrial energy use.

1.2 The BGC, which has a virtual monopoly of piped gas supply in Great Britain, is organised in twelve regions under the management of the Corporation's Executive. BGC's Headquarters, to whom Regions are accountable, has responsibility for the acquisition and national transmission of gas as well as for the overall strategy, planning and direction of the industry. The Regions have responsibility for the distribution of gas to some 16 million customers and for the activities of service and distribution workers.

1.3 Virtually all the supplies of gas in Great Britain come from the North Sea via four receiving terminals on the East Coast (Bacton and St Fergus, which handle the major share, together with Theddlethorpe and Easington). Gas is distributed via the fully-integrated national transmission system.

1.4 This report considers -

- the industrial relations background (Section II)
- the nature and effects of industrial action (Section III)
- the scope for mitigating the effects of industrial action (Section IV)

The conclusions and recommendations are summarised in Section V. The Group has not considered it right at this stage to consult the BGC on its conclusions and recommendations or to have full and frank discussions with them on the matters discussed in the report.

II. THE INDUSTRIAL RELATIONS BACKGROUND

2.1 The BGC's employees fall into the following groups:

i. Manual workers: 42,000, of which over 90 per cent union members

Main unions: General Municipal, Boilermakers and Allied Trades Union (GMBATU): 32,000

Transport and General Workers Union (TGWU): 4,000

Various craft unions under umbrella of the Confederation of Shipbuilding and Engineering Unions (CSEU): 1,500

Settlement date: mid-January

ii. Administrative, professional, technical and clerical staff: 55,000 of which over 80 per cent union members

Main union: National and Local Government Officers' Association (NALGO): 42,000

Settlement date: 1 June

iii. Higher management: 4,000, of which about two-thirds union members

Main unions: NALGO: about 1,300

Gas Higher Management Association (GHMA) (not affiliated to TUC): about 1,300

Settlement date: 1 June

Recent industrial action

2.2 There has been comparatively little industrial action in the gas industry. The first national industrial action in the industry this century took place in February 1973 at a time when a considerable proportion of the supply still consisted of manufactured gas. Selective industrial action by manuals over pay for a 6 week period led to the loss of some supplies of manufactured gas to industry.

2.3 Since the industry went over entirely to natural gas, with the exception of the one-day strike in 1981, onshore industrial action has taken the form of

a work-to-rule and/or overtime bans rather than all-out strike. Action since 1973 has been limited to the following:

February 1976: Staff, mainly instructors, supervisors and computer personnel took selective regional industrial action over steps taken by the employers to honour agreements with the manuals. The action varied between regions: there were one-day stoppages involving several thousand staff in some regions and longer stoppages involving small numbers of staff, in particular the computer personnel, in other regions. The action lasted about 3 weeks before it was called off after a settlement based on a staff efficiency agreement. Gas supplies to consumer were not affected and adequate safety cover and emergency services to the public were maintained.

July 1981: The manuals and staff gas unions called an official one-day strike on 18 July as part of their joint campaign against the Government's decision that BGC should withdraw from gas appliance retailing and dispose of its showrooms. About 95 per cent of BGC's total workforce supported the strike, the majority of those remaining at work being high management grades. Gas supplies to consumers were not affected (due mainly to low seasonal demand) but provision of safety cover varied between regions and in some cases there were serious deficiencies in safety cover.

October 1981: There was a phased sequence of industrial action by shift workers in support of a claim for increased allowances. Support for this action was patchy, with four regions completely unaffected (it was estimated that 600 out of 1600 shift workers came out). The dispute lasted 26 days before being called off owing to lack of support. Significant factors enabling BGC to withstand the action were widespread co-operation from higher management in replacing striking shift workers and lack of support for the strike from day workers. Supplies to consumers were not affected as a result of the shift workers' action. Adequate safety cover and emergency services to the public were maintained.

2.4 There was however in October 1981 a risk of loss of supply when the Anglo-Norwegian Frigg field was shut down for 4 days as a result of strike action

over a pay dispute between the workers and the field operator. Supplies to industrial customers had to be interrupted in accordance with the terms of their contracts. Arrangements were in hand to take emergency powers under the Energy Act 1976 to relieve the BGC of its statutory and contractual obligations to supply and to restrict the use of gas when the dispute was called off.

Attitudes to industrial action

2.5 The fact that industrial action by the BGC's employees has so far been very limited is probably the result of the following:

i. the workforce generally earn substantially more than the national average and their relative position has improved over the last 5 years or so;

ii. the operational safety factor in this industry is a powerful inhibiting influence against reckless stoppages or other action which might lead to explosions;

iii. there is a tradition, particularly amongst professional and managerial grades, that the service of an essential public utility should be maintained;

iv. the main unions, the GMBATU and NALGO, have traditionally been regarded as moderate both politically and in their attitudes to industrial action, although both unions were involved in the National Health Service dispute in 1982 and the GMBATU played a prominent role in the water industry strike earlier this year; any official national industrial action by either of these two unions would probably be preceded by some form of consultation with the membership.

Further information relevant to points i. to iii. is provided in the following paragraphs.

Recent pay history

2.6 In recent pay rounds settlements for the gas industry manuals have been roughly at the same level as for the electricity supply manuals; in both cases perceptions of the settlement for the miners were undoubtedly influential. Settlement levels have been broadly comparable to those in the other state monopolies. Last year both gas and electricity reached settlements somewhat lower than both the perceived and the actual settlement for the miners. But inflation was falling steadily at the time and all these settlements were in line with the RPI at the time agreement on each was reached.

Table 1

	1980/81	1981/82	1982/83
Gas manuals:	12%	7½%	5¼%
Electricity manuals:	12%	7½%	5½%
Miners:	9¾%	7½%	6½%
(Presented as equivalent on rates to:)	(13%)	(9%)	(8-9%)
Water manuals:	12¼%	8¾%	10%
Average over public trading sector:	9½%	7½%	5½%
Average over whole economy:	8½%	7%	5½%

2.7 Current average earnings for gas industry manuals are substantially higher than the whole economy average. They are similar to those in electricity, and fall between the higher earnings of underground coal workers and the lower earnings of surface coal workers.

Table 2 (NES 1983)

Average earnings levels

Manuals - whole economy	£143.6
Gas manuals	£174.2
Electricity supply manuals	£173.3
Water manuals	£148.0
Coal - underground	£188.6
Coal - surface	£159.5

2.8 There is no evidence of any special pay issue which might affect the gas industry pay negotiations in the current round. The miners' settlement and the RPI will be significant - both may point to settlement levels similar to those in the last round.

Union attitudes to safety and health

2.9 Given the nature of the industry, both major unions would undoubtedly issue guidance to their members on the conduct of any major industrial action particularly as regards safety considerations. In the water strike GMBATU issued a mandatory Code of Conduct requiring the maintenance of supplies to priority consumers such as hospitals and old people's homes. The TUC's guidance on the conduct of industrial disputes issued to all affiliated unions calls for arrangements to be made to ensure the maintenance of supplies and services "essential to the health and safety of the community". The precise application of such principles in particular circumstances can, however, give rise to much argument at local levels, and they provide no reliable guarantee that safety and health will be effectively safeguarded.

Attitudes of higher management

2.10 The one-day strike in July 1981 precipitated the formation of the Gas Higher Management Association (GHMA) by managers and professional grades who were opposed to industrial action in an essential service and had come to the view that their professional responsibilities were incompatible with continued membership of NALGO. Of the 4,000 managers and professionals, about a third are now members of GHMA, a third remain members of NALGO, and the remainder are largely non-unionist (a few may be members of other unions). GHMA was registered as a trade union in December 1981 and applied for a certificate of independence in June 1983. It is not affiliated to the TUC.

2.11 The constitution of the relevant part of the industry's negotiating structure - the NJC for Higher Management - is now under review. BGC has given NALGO notice of termination of the current constitution, and has told them that from early next year seats on the NJC will be allocated to NALGO and GHMA on a 50:50 basis. It is too early to judge how these developments will work out or, indeed, whether GHMA will prove to be a durable grouping. However, the history of this breakaway clearly indicates reluctance on the part of many

managers and professionals to be associated with industrial action (it seems probable that many of those remaining in NALGO do so for reasons not connected with their attitudes to industrial action). Recent experience in the British Telecom dispute illustrates similar attitudes amongst higher grades in that service.

Issues likely to give rise to industrial action

2.12 The analysis in the preceding paragraphs suggests that the propensity of BGC's employees to take industrial action is not normally high and that there is in particular a relatively low risk of industrial action on pay issues in BGC. There is a higher risk of industrial action arising from job losses and/or privatisation, which is assessed in the following paragraphs.

Job losses

2.13 Job losses from showroom closures, decline in customer service work in some areas and efficiency measures could give rise to industrial action in the short term. Unless they were linked to the Government's privatisation plans, action would be more likely to be local than national.

2.14 Nevertheless, NALGO are reported in the press to have threatened a major campaign including strike action to oppose job losses generally. This is a result of recent press speculation that BGC intend to close some 200 uneconomic showrooms. Part of the NALGO campaign would be aimed at achieving shorter hours, longer holidays and early retirement. BGC have not confirmed that the figure of 200 showroom closures is accurate, and there seems no ground to believe that jobs will be threatened as a result of proposed closures. Strikes in late September 1983 caused showrooms to be closed for one day in the Aldershot area, but the action was short-lived and had no effect on gas supplies. The Department of Energy is not aware of further strikes over job losses arising from showroom closures.

2.15 Compulsory redundancies and redeployment arising from either reduced workload or the Corporation's efforts to improve efficiency could give rise to local disputes similar to the recent dispute among fitters in the North Thames Gas region. In this dispute, the redeployment of 20 fitters to an adjacent area led to short-lived, unofficial action among 400 fitters in the region. Emergency cover was maintained.

Privatisation

2.16 Government proposals to privatise BGC in whole or in part are the issue most likely to give rise to industrial action of a more serious kind than has been seen hitherto in the industry. Following press speculation in August 1983 that the Government was planning to sell off the entire Corporation, the gas unions stated to the press that they would take industrial action if privatisation proposals went ahead. The unions, under their umbrella organisation GUARD (Gas Unions Against [the Monopolies and Mergers Commission] Report for Dismantling BGC), recently met the Secretary of State for Energy and registered their wish to be consulted about the Government's policies in relation to BGC privatisation.

2.17 The extent of, and level of support for, industrial action against privatisation will be critically dependent on the nature of any proposals eventually put forward. There is some evidence that proposals involving the break-up of the present structure of the industry would be more strenuously opposed than a transfer to the private sector of the industry as a whole. The attitude of employees could to a considerable extent be expected to follow the lead of top management, and the Government may find that vigorous efforts are needed to bring home to management the benefits of the proposals. It is generally accepted that the attitude of the Chairman of BGC to the Government's decision in 1981 that the Corporation should dispose of its showrooms made a significant contribution to the "success" (95 per cent of the workforce) of a one-day protest strike, although there was no question of management participation in the strike itself. Otherwise, the attitude of employees would depend on the implications of the proposals for the security of their livelihoods and their work practices, and on how the proposals squared with employees' attitudes towards the industry both generally and as an employer. The attitude of trade unions both in the industry and more generally in the TUC would no doubt be influenced by a perception on their part that the gas industry is close to the heartland of the nationalised sector of the economy.

2.18 The threat of industrial action over privatisation which has already been made by the gas unions must be regarded as a serious one and Ministers will have it in mind when they come eventually to discuss proposals. Ministers in the Department of Energy are currently reviewing privatisation objectives in relation to the industry, including BGC's appliance retailing business, and it

is likely that the Secretary of State will bring forward proposals sometime in the New Year. Matters could be expected to come to a head quickly once any proposals were announced.

Industrial relations outside the BGC

2.19 As the 1981 strike in the Frigg field showed, gas supply may be vulnerable to industrial action outside the BGC. This could arise in three areas:

i. offshore in the Frigg field;

ii. offshore on the United Kingdom Continental Shelf (UKCS);

iii. at the oil company ends of the onshore terminals.

Offshore: supplies from Frigg

2.20 The Frigg field at present provides some 35 per cent of British gas supplies. In addition to the dispute in October 1981, workers in the Norwegian sector of the Frigg field took strike action over pay in July 1980 and October 1982 and threatened a strike in April 1983 but gas supplies to Britain were not affected on these other occasions. An important factor in reducing the risk hitherto has been a reluctance of the workers to allow the strike action to affect supplies from the UK sector of the field because of a tax protocol between the UK and Norway which gives workers in the UK sector substantial taxation benefits. It is proposed, however, to amend the tax protocol, probably within the next two or three years, removing the taxation benefits. Together with falling reservoir pressure, this will increase the risk that, in the event of future disputes, we shall not be able to count on the maintenance of supplies from the UK side of the field. The Norwegian workers clearly have a high propensity to go on strike. However, Norwegian legislation provides machinery to bring strikes to an early end through Government-enforced arbitration, provisions which Norwegian workers have so far respected. There are therefore grounds for hoping that, when a strike does occur, the dispute will be resolved quickly enough to avoid disruption of British gas supply.

Offshore: UKCS

2.21 At peak winter demand gas supply would be particularly vulnerable to the loss of production from the largest UKCS field, Leman, which contributes 20 per cent of peak supplies. Strikes on UKCS installations are however rare. Attempts to spread such isolated disputes as have taken place have so far come to nothing, or at worst have been short-lived and have not affected production.

Oil company end of terminals

2.22 A high proportion of supplies comes from two terminals, St. Fergus (35 per cent) and Bacton (45 per cent). The oil company end of each terminal is split (into two at St. Fergus, into three at Bacton) and any strike would be likely to be on a company basis and to affect only one company terminal. The staff are not unionised and there is no history of industrial action. The terminals are moreover highly automated and can be operated by a few key staff. There is therefore little risk of disruption to gas supply arising from industrial action by oil company employees at terminals.

Overall position

2.23 The overall position can therefore be assessed as follows:

i. there has been a low propensity to take industrial action by BGC's employees, because they are relatively well paid, are concerned about safety, are represented by traditionally moderate unions and, in the case of managerial grades, have a culture which is antipathetic to industrial action;

ii. there appears to be little risk of industrial action over pay;

iii. there is a somewhat greater risk of action of job losses although this is more likely to be local than national;

iv. the issue most likely to provoke industrial action is privatisation, depending to some extent on how far the existing structure is likely to be broken up, on the lead given by top management, and on the perceived implications for job security and work practices;

v. with the exception of workers in the Frigg field, where it is hoped that any strike would be settled quickly under the Norwegian arbitration arrangements, the risks of industrial action outside BGC affecting gas supplies are low.

III. THE NATURE AND EFFECTS OF INDUSTRIAL ACTION

Introduction

3.1 The gas industry has four main functions, all of which are potentially vulnerable to industrial action. These functions are:

(a) the production and landing of natural gas;

(b) the transmission and storage of natural gas received by the Corporation and supplies to the regions, including the monitoring of the transmission system and compressor stations;

(c) the supply of gas to consumers including the construction, repair and maintenance of distribution and service pipes; and

(d) the provision of service to customers including the sale of appliances and the installation, repair and maintenance of customers' appliances and pipework.

3.2 The possible effects of industrial action are described below. If the workers were so minded, the effects described could be brought about by action short of outright strike, though it should be borne in mind that industrial action on the mainland in recent years has not, in fact, posed any particular threat to gas supplies (see 2.3 above).

Production and landing of natural gas

3.3 Apart from the BGC end of the terminals, the production and landing of natural gas are dependent on employees other than those of the BGC. The likelihood of prolonged industrial action by non-BGC employees has been assessed in the preceding section. The risk is not thought serious except in respect of Norwegian employees in the Frigg Field, and in the latter case there are grounds for supposing that the action would not be prolonged. There remains the possibility of industrial action affecting the BGC ends of terminals. If the BGC ends of the terminals were not kept in operation the entire British gas supply system would have to be shut down. This risk is however assessed as having a very low probability. The BGC ends of the terminals, like the oil company ends, are highly automated and are operated by a small number of key

shift workers. (Three people on each shift at Bacton). During the industrial action in 1981 some of the shift workers at the onshore terminals went on strike but the higher management stepped in and, with the help of some workers who did not go on strike, kept the terminals operating normally. The probability is that, because of the very serious and rapid effect of putting the terminals out of action, the unions would not wish to raise the stakes in this way and that, as in the past, some way would be found to keep them going.

Transmission

3.4 If the national transmission system were to fail, gas supply could be cut off entirely to one or more regions of the country. The transmission system is however the BGC operation which is the least immediately vulnerable to industrial action. With centralised and largely automatic control there is little scope for bringing about an immediate shutdown. The risk is of loss of essential maintenance, in which 2,500 skilled workers are normally involved. The crucial need is to keep in operation 44 compressor stations, driven by aero-engines, to maintain pressures and to increase gas flow. These are normally checked after around 1,000 hours of operation. The checks are not however required for safety reasons. If repairs were necessary and the skilled maintenance workers (CSEU members) were on strike the BGC would need to seek assistance from the manufacturers (Rolls Royce) or possibly from the armed services (see 4.17 below). If progressive closure of parts of the system were to occur, precautions (to prevent the formation of an explosive gas/air mixture) would have to be taken to preserve public safety while outlets were being closed.

Distribution and service

3.5 Industrial action by BGC employees would be most likely to have significant impact on the repair and maintenance of the distribution system (ie. between the national transmission system and the customer's meter) and the repair and maintenance of customers' appliances and pipework. Some of this work (for example the fitting of new appliances and routine servicing of appliances) can be postponed with only minor inconvenience to the consumer. A considerable part of the work consists however of essential maintenance of the distribution system or emergency attendance to deal with faults which involve, or may involve, gas leaks. Of the 16 million jobs carried out each

year in distribution and service, some 2½ million are emergency work.

3.6 Of the emergency work, some 90 per cent is accounted for by reported leaks on the customer's side of the meter. If the manual workers were on strike, customers would be told to shut down their supply at the meter. Although these customers (whose numbers might increase at a rate of 20,000 to 40,000 a week) would lose their gas supply with considerable hardship to themselves individually, the effects would be isolated and scattered, and it would be open to the customers concerned to try to get the repairs undertaken by private contractors.

3.7 In dealing with the remaining 10 per cent of leaks on the supply side of the meter the option of making safe by cutting off very small areas from gas supply is not in practice available. The local distribution system does not have a valve system suitable for this purpose. The district (as opposed to the local) distribution system does have governors and sections of it could be closed in a serious emergency involving major loss of gas supply (resulting for example from failure in production offshore, in the terminals or in the national transmission system). Closure would however be regarded as a last resort since it would not result in complete safety for the public because of possible explosive air/gas mixtures in the mains. Purging the affected parts of the system would be time-consuming and would require many staff. Moreover resumption of supplies would entail a fitter calling at every customer's premises to check the pipes and appliances before the gas supply was switched on again at the meter (a task which might take three weeks for 10,000 domestic consumers).

3.8 Every effort would therefore have to be made to repair leaks in the distribution system. The National Agreement relating to emergency cover would probably be interpreted by the unions as requiring them to undertake temporary repairs in the distribution system by "taping". However, depending on the circumstances of a particular leak, BGC might well not regard such temporary repairs as fully adequate, since gas would continue to escape albeit at a reduced rate. They would then have to consider whether it was practicable to effect more permanent repairs by management action, possibly with the help of contractors' labour. Only if this proved impracticable, either because of contractors' attitudes, or because the number of serious leaks exceeded the capacity to effect permanent repairs, would BGC have to adopt the "last resort"

course of cutting off supplies to whole districts, affecting in each case perhaps 5,000 - 10,000 consumers.

3.9 There remains the work involved in essential maintenance to permit the continued supply of gas through the distribution system. This depends on relatively few workers. The management might seek to invoke the National Agreement on emergency cover because of the difficulties described in paragraph 3.7 above in closing down safely parts of the distribution system. If the few workers involved were not prepared to carry out the essential maintenance, every effort would be made to carry out the task by management action, possibly with the help of contractors' labour.

3.10 BGC use around 11,000 contract workers on a range of routine and emergency work on the distribution system and in connection with the installation and maintenance of appliances. The number of contract workers varies from region to region according to their labour needs at the time. The extent to which this contract labour could be used by BGC when their own employees were taking industrial action would vary from region to region and would depend on the nature of the dispute, on whether or not they were unionised and on the degree of support for action from the BGC employees and from the public.

Overall assessment of nature of industrial action

3.11 The analysis in the preceding paragraphs suggests that industrial action, in the form either of an all-out strike or of action short of it, would be most likely to result in the cutting-off of supplies to individual customers, rather than the failure or closure of the system as a whole, or of many parts of the system. But there is a risk that leaks in the low-pressure parts of the system could not be repaired promptly and effectively and that this could lead to a slowly growing number of small districts suffering a complete loss of gas supply. The remaining paragraphs of this Section assess the vulnerability of particular groups of customers to loss of gas supply.

Effect on consumers

3.12 In 1982/83 the BGC's customers were broken down as follows:

Domestic	15,347,000
Commercial	499,000
Industrial	83,000
Total users	15,929,000

The main impact of industrial action would probably be on those domestic consumers (about half of all households) who rely on gas for heating and cooking. As explained in paragraph 3.6 above only a very small percentage of such households would be likely to be affected (eg. 300,000 or about 2 per cent) even if the strike were to last for, say, ten weeks. Moreover some of these households might have alternative facilities for meeting some of their heating and cooking needs, and many of them could be expected to try and get their appliances or pipework repaired by private sector labour although, particularly in some parts of the country, the availability of such labour might be insufficient.

Industrial effects

3.13 Just over 30 per cent of all energy used by industry is natural gas. It is used extensively in industry for both process work and space heating. Some firms use very large quantities and would have to cease operations altogether if supplies were cut off unless they had an alternative source of energy on standby. Such standby arrangements are required for those industrial consumers, responsible for about 45-50 per cent of industrial consumption, who are on interruptible contracts. The ability of such firms to withstand a gas shortage would depend on the level of their alternative fuel stocks (likely to be related to the number of days of interruptibility remaining under their contracts when an emergency occurs) and the availability of new supplies of their alternative fuel. Interruptions under the terms of these contracts tend to take place at times of high demand (i.e. usually in winter). The likely effect of industrial action on "interruptible" customers would thus depend, among other factors, on the time of year and the severity of the weather. Where gas is used industrially only for space heating, the effect would depend on the willingness of employees to continue at work in the absence of heating.

3.14 The largest industrial consumer of gas by far is the chemical industry (about 40 per cent of industrial sales). The steel industry is the second

largest consumer. A summary of the information available about the industries most dependent on natural gas is provided in the Annex. It should be borne in mind however that if there is no shortfall in supply offshore and the terminals, national transmission system and distribution up to the customer's meter are kept in operation, the industrial customer is vulnerable only to the risk of leaks on his side of the meter which might require repair. Many industrial consumers might be able to undertake the necessary repairs without help from BGC employees. The larger industrial consumers draw gas direct from the higher-pressure parts of the distribution system, and are unlikely to be affected by the sort of leaks and closures of parts of the system discussed in paragraph 3.8 above.

Effect on commercial and other users

3.15 In the commercial and public service sectors gas is used extensively in hospitals, schools and a variety of public sector institutions as well as in shops and offices, mainly for space heating and catering. There are also some specialised users (notably crematoria) which are almost wholly dependent on gas. Without gas about 50 per cent of hospitals containing some 30 per cent of hospital beds in England and Wales (and a somewhat lower proportion in Scotland) would probably have to close and many others would face severe difficulties. Many other commercial and public sector establishments would have to close, except where they were able to switch to alternative sources of energy. It should however be kept in mind, as in the case of industrial consumers, that the effect of industrial action on such major consumers will be limited if it is confined to the non-repair of leaks on the customer's side of the meter and that it might prove possible for large consumers to have such leaks repaired without assistance from BGC employees. However, many such consumers draw their gas from low-pressure distribution systems and are accordingly at risk of having their supplies cut off by closure of parts of the system as described in paragraph 3.8 above.

Supplies to isolated communities

3.16 There are 18 small, isolated communities, mainly in Scotland and Wales, whose gas supplies are dependent on road-borne supplies of LPG or LNG. The risks of local industrial action are considered to

be low since the local BGC personnel responsible for the day to day operations on site would be unlikely to support industrial action to the point of discontinuing gas supplies to their own small communities. However the same consideration might not apply to the drivers of the vehicles required to deliver gas supplies and industrial action by them could prevent BGC replenishing local stocks. Although the private sector could provide alternative supplies of LPG it is unlikely that they would be willing to jeopardise their own industrial relations by asking their employers to take part in strike breaking operations. Local trouble spots would then arise whose controversiality and news value might be out of proportion to the fairly low numbers affected.

IV. THE SCOPE FOR MITIGATING THE EFFECTS OF INDUSTRIAL ACTION

4.1 As explained in the preceding section the effects of industrial action would depend crucially on the functions affected, ie:

- action affecting the production and landing of natural gas would result in a reduction in supply to the country as a whole

- action leading to the failure of parts of the national transmission system could mean a loss of supply entirely to areas of the country

- while for technical and safety reasons every effort would be made to prevent action affecting the district distribution system or the local distribution system from resulting in loss of supplies to whole districts or localities, circumstances could arise where shutting off supplies locally would be seen as the lesser of two evils

- action affecting distribution and service on the customer's side of the meter would result in a withdrawal of labour for repair and maintenance leading to the shutdown of the supply to individual customers, as well as the postponement of non-essential work.

4.2 The form of mitigating action would depend on the situation arising, ie:

- reduction in supply to the country as a whole or part of the country would be countered so far as practicable by use of stocks, or reductions in consumption

- loss of supply to particular consumers would be mitigated to the extent that they had access to alternative sources of energy

- withdrawal of labour required for the safe operation and maintenance of the system would be countered, so far as practicable and desirable, by the provision of substitute labour.

Stocks

4.3 A quantity of natural gas is stored as a refrigerated liquid (LNG) and in a severe winter this can be evaporated and used to help to meet the peak demand. There is also gas stored in salt cavities at Hornsea, Humberside, which can be similarly available at times of peak demand. These stores are additional to the supplies of gas from the North Sea, and on a severe winter peak day could constitute about 15 per cent of the total supply. A proportion of this LNG is also set aside to cover mechanical failures in the system.

4.4 Peak gas supplies are available from plants which use oil (naphtha) and light petroleum gases as a feedstock, eg. substitute natural gas and butane/propane air plants. In total these plants constitute about 1.5 per cent of the total supply. In addition to these onshore peak supply plants, the Rough field, which supplies gas into the Easington terminal, is now fully owned by BGC and is to be used as a seasonal store producing gas only as required at times of peak demand in the winter.

4.5 Total storage capacity is equivalent to about two days of peak supplies, although a proportion of this is necessary for security purposes to ensure a safe shutdown of the entire system in an emergency. This would, in combination with reductions in consumption, enable the loss of the largest UKCS field (Leman, contributing 20 per cent of peak supplies) to be withstood for a short period. BGC's LNG and other on-shore storage capacity is closely geared to meeting short-term peak demand and an increase in storage capacity on a scale that would be of significance in a prolonged strike would not be economically justified. The Rough and Morcambe projects will provide, from the winter of 1984/85, greater flexibility in meeting seasonal peak demand. However, these additional peak supplies available from offshore would do little or nothing to increase resilience against disruption of the onshore transmission or distribution system.

Reductions in consumption

4.6 The need to maintain adequate pressure in the system for technical and safety reasons means that there is little scope for reducing gas consumption without cutting off supply to particular consumers. Pressure reduction would achieve only a very small saving especially at times of peak demand. Rota cuts,

of the kind used to reduce electricity consumption, are ruled out on technical and safety grounds. An appeal to consumers to economise in the use of gas would probably have only a small effect.

4.7 The first significant measure to reduce gas consumption would therefore be to cut off interruptible supplies within the terms of consumers' contracts. The savings would depend on the number of days of interruptibility remaining from the usual period of 90 days provided in the contracts but the total supply of interruptible gas is only some 20 per cent of gas consumption.

4.8 The next step would be to use the emergency powers under the Energy Act 1976 to enable statutory restrictions on the use of gas to be imposed and for contraventions to be penalised. Orders made under these powers can apply to groups or classes of consumers or to all consumers within some specified area. They may prohibit the use of gas altogether or at certain times or for certain purposes. Directions could be given to individual consumers requiring them to stop using gas. These powers are only available while an Order in Council under Section 3.1 of the Act is in force.

4.9 When supplies fall short BGC need to reduce demand rapidly to match available supply, first by ceasing to supply interruptible customers and then by requesting selected major customers to reduce their demand. Once the situation has been brought under control it is open to them, within the limits set by available supplies and by the need to maintain minimum safe pressures in local distribution mains, and subject to the necessary statutory powers having been taken, to seek to give preference to priority consumers as determined by Government. It is not at present clear to us how effective are the arrangements for giving guidance to BGC on the priorities to be observed. The Group recommends that the Department of Energy, in consultation with DTI and other interested Departments and with BGC, should re-examine these arrangements and should report the outcome to the Civil Contingencies Unit.

Alternative energy sources

4.10 It is compulsory for industrial users supplied on interruptible terms to have an alternative source of energy - in most cases heavy fuel oil. The effect of loss of supply on their customers, and any other customers with the

capacity for switching to oil, would be mitigated by any arrangements which the oil companies were able to make to ensure that increased supplies of heavy fuel oil were available to such customers.

4.11 Some consumers in the industrial and commercial sector, and many domestic consumers, will be able to meet some of their needs by switching to electricity. It is conceivable that electricity demand at peak times of the day in the winter might, as a result, rise above the ability of the electricity industry to supply. For example, if a third of domestic gas consumption at the evening peak on an average winter day were to be replaced by switching to electricity, there would be a shortfall in generating capacity of some 13 per cent. Such a shortfall would (even without taking into account constraints on transmission and distribution capacity) require rota power cuts of the order of those experienced during the winter of 1973/74, during which most consumers were liable to suffer about one three-hour power cut a day on average.

Substitute labour

4.12 As the analysis in Section III showed, the areas in which substitute labour might be required are as follows:

i. the terminals can be kept in operation by higher management with the help of a handful of workers (it would be surprising if BGC were unable to command the resources needed to do this, though it has not been thought desirable to consult them on the point specifically);

ii. the national transmission system can be kept in operation by higher management with the help of some of the 2,500 skilled maintenance workers or failing that assistance from the manufacturers of the engines (Rolls Royce) or possibly the armed services (see 4.17 below);

iii. distribution and service work essential for safety purposes ought to be carried out by BGC employees under the National Agreement. Where work is regarded as essential by management but not by the unions it would be open to management to seek to get it done by private contractors (who might, however, be unwilling to engage in "strike breaking") or by service assistance. In either case, however, there would be some risk to existing safety cover by BGC employees.

Existing plan for Service assistance

4.13 The current plan for Service assistance in the event of industrial action in the gas industry is known as VIBRATE. It provides Service manpower to assist the industry to maintain safety measures during industrial action by manual workers. It involves a total of 5430 servicemen (200 LV electricians, 50 HV electricians, 1485 mechanics, 885 drivers and 2810 unskilled/semi-skilled).

4.14 The plan envisages that the servicemen should be divided between the British Gas regions. Gas industry staffs would then allocate them to tasks and supervise their "on the job" training. The tasks they would be given are:

a. support for tasks for regional gas distribution (eg. monitoring pressure flow conditions and carrying out essential safety measures in gas holder stations);

b. maintenance of emergency services (eg. detection and temporary repair of gas leaks and initiation of shutdown procedures at gas supply sites).

As usual in operations of this sort, although tasking is a matter for gas industry management, the servicemen would remain under Service command throughout.

4.15 Successful implementation of the plan depends upon:

a. the continued operation, by gas industry staff, of the main high pressure transmission system;

b. the continued presence at work of sufficient supervisors to task and train the servicemen;

c. unrestricted access to specialised equipment.

The importance of the continued working of staff grades is therefore evident. If they are not prepared to work the Services lack the expertise to replace them.

4.16 Even if these requirements are met, the capacity provided by the Services is small in relation to the industry's normal manpower (around 42,000 manual workers). The servicemen can therefore do no more than provide limited safety cover. There is no prospect of expanding the plan, because the Services lack the skills needed in the industry.

4.17 As indicated earlier in this paper (paragraph 3.4) the need to keep in operation the compressor stations driven by gas turbines is critical to the maintenance of BGC's transmission system. Although recourse to the manufacturers might prove feasible in the event of a breakdown it would be desirable to have available a source of expertise which is not so susceptible to industrial relations pressures. At first sight the maintenance of gas turbines seems likely to be an area in which Service expertise will be relevant but the full feasibility of a Service plan to cover this task cannot be established without more detailed study, which will require consultation with BGC. It is therefore recommended that CCU should be charged with investigating the possibility of preparing a plan for Service assistance with the task of maintaining the compressor stations in operation.

General considerations affecting the use of substitute labour

4.18 In considering whether to use substitute labour, whether from private contractors or from the Services, the BGC would have to assess the existing level of emergency cover provided under the National Agreement and the risks that the existing cover might be withdrawn. It would also be necessary to ensure that work already being done by higher management, beyond their normal duties, would not be affected, and that their co-operation with any substitute labour would be forthcoming.

Overall assessment

4.19 The scope for mitigating action to counter a reduction in gas supply, by use of stocks or by reduction in consumption is limited. Further work is desirable to ensure that adequate guidance is given to the BGC on the priorities to be observed among consumers in a situation of reduced supply. The length of time that a substantial shortfall in gas supply could be withstood will depend on the nature and scope of the shortfall and on the time of year. A severe shortfall in overall supplies, which would be more likely to arise

from action by workers in the Norwegian Frigg field than from action by the BGC's employees, is however not thought to have a high probability.

4.20 The main scope for mitigating action is in the use of substitute labour. The small number of key BGC personnel necessary to keep the terminals and national transmission system in operation could not be substituted with people from outside BGC. However, it should be possible in certain circumstances for BGC management to use substitute labour (either private contractors or servicemen under the existing plan VIBRATE) to maintain the district and local distribution system in a safe condition, should this not be achieved through union co-operation under the National Agreement on emergency cover. Industrial consumers affected by a leak on their side of the meter will lose supply unless they are willing and able to have the leak repaired either by their own staff or by a private contractor.

4.21 The co-operation of higher management is however essential for keeping the system in operation in all its functions, from landing to the consumer.

V SUMMARY OF CONCLUSIONS AND RECOMMENDATIONS

Industrial relations background (Section II)

5.1 The industrial relations risks can be summarised as follows:

i. there has been a low propensity to take industrial action by BGC's employees, because they are relatively well paid, are concerned about safety, are represented by traditionally moderate unions and, in the case of managerial grades, have a culture which is antipathetic to industrial action;

ii. there appears to be little risk of industrial action over pay;

iii. there is a somewhat greater risk of action over job losses although this is more likely to be local than national;

iv. the issue most likely to provoke industrial action is privatisation, depending to some extent on how far the existing structure is likely to be broken up, on the lead given by top management, and on the perceived implications for job security and work practices;

v. with the exception of workers in the Frigg Field, where it is hoped that any strike would be settled quickly under the Norwegian arbitration arrangements, the risks of industrial action outside BGC affecting gas supplies are low.

Nature and effects of industrial action (Section III)

5.2 The effect of industrial action by BGC's employees on the main functions of the system is assessed as follows:

i. it ought to be possible to keep the terminals in operation given the cooperation of higher management, and assistance from a small number of key workers (probably less than ten); this should be

forthcoming bearing in mind the small numbers involved and the likely reluctance of the unions to precipitate a closure of the entire gas supply system;

ii. the centralised and automated national transmission system is unlikely to be shut down, given cooperation from higher management; it would become progressively vulnerable to breakdown through loss of essential maintenance, but only a small number of skilled men would be required for this and, if need be, assistance might be sought from the equipment supplier (Rolls Royce) or possibly from the armed services.

iii. the distribution system is vulnerable to the loss of labour for the repair of leaks and essential maintenance; the 90 per cent of leaks on the customers' side of the meter would be dealt with by shutting off supply at the meter, unless the customer could get the leak repaired without BGC assistance; this might cause progressive loss of supply at the rate of 20,000 to 40,000 customers a week; leaks in the distribution system on the supply side of the meter might be repaired, perhaps only temporarily, with cooperation from the unions under the National Agreement relating to emergency cover; if BGC did not regard such repairs as adequate they would need to decide whether it was practicable to effect permanent repairs by management action, perhaps with the help of contractors' labour; if these repairs proved impracticable BGC would have to adopt the "last resort" course of cutting off supplies to whole districts.

5.3 The consumers vulnerable to industrial action affecting gas are mainly:

i. the 50 per cent of domestic households using gas for heating and cooking;

ii. some major industrial users, and particularly the chemical industry;

iii. a large part of the commercial and public service sectors (including hospitals) who use gas for space heating and catering.

5.4 It should be borne in mind however that, if there is no shortfall in supplies from offshore, and provided that there is continued working by the relatively small number of key staff necessary to keep gas flowing through the national and regional systems, the effects of industrial action would be limited. Only a small percentage of domestic households would progressively have supply cut off at the meter because of leaks on their side of the meter. Some of these might be able to have repairs done by the private sector or to switch to electricity for some at least of their needs, though larger local concentrations of consumers would lose supplies if it became necessary for safety reasons to cut off some supplies at the district level. Those industrial consumers (responsible for about 45-50 per cent of industrial consumption) who are on interruptible contracts would have alternative standby arrangements and might in any event be able to use their own qualified labour to repair leaks on their side of the meter. Major commercial and public service sector consumers may also be able to get their leaks repaired without BGC assistance. Larger industrial consumers are unlikely for technical reasons to be affected by leaks and closures in the district distribution system, though the same is not true of larger commercial and public sector consumers.

Scope for mitigating the effects of industrial action (Section IV)

5.5 The scope for mitigating action to counter a reduction in gas supply by use of stocks or by reduction in consumption is limited. Further work is desirable by the Department of Energy and other Departments concerned to establish with BGC how far in a situation of reduced supply preference could be given to priority consumers as determined by Government. The length of time for which a substantial shortfall in gas supply could be withstood would depend on the nature and scope of the shortfall and on the time of year. Such a contingency, which would be more likely to arise from action in the Norwegian Frigg Field than from action by the BGC's employees, is however not thought to have a high probability.

5.6 The main scope for mitigating action is in the use of substitute labour. The small number of key BGC personnel necessary to keep the terminals and national transmission system in operation could not be substituted with people

from outside BGC. However, it should be possible in certain circumstances for BGC management to use substitute labour (either private contractors or servicemen under the existing plan VIBRATE) to maintain the district and local distribution system in a safe condition, should this not be achieved through union cooperation under the National Agreement on emergency cover. Industrial consumers affected by a leak on their side of the meter will lose supply unless they are willing and able to have the leak repaired either by their own staff or by a private contractor.

5.7 The cooperation of higher management is however essential for keeping the system in operation in all its functions, from landing to the consumer.

Possible strategies

5.8 In considering possible strategies the Group confined itself to considering the scope for reducing the risk of, or improving the ability to withstand, industrial action by the BGC's own employees. Action affecting gas supply by others is either very unlikely or (as in the case of disputes affecting workers in the Norwegian Frigg Field) is normally outside the influence of the BGC or the United Kingdom Government. The Department of Energy is in close touch with the Inland Revenue and the Treasury about the proposed new tax protocol affecting these workers and would ensure that the risks to gas supply would be carefully weighed and brought to the attention of Ministers before a decision was taken to bring the new protocol into force.

5.9 It was also outside the Group's remit to consider how far industrial action in the gas industry might be deterred by existing or proposed legislation on industrial relations, either of general application or of application particularly to essential services, since these matters are under separate consideration.

5.10 The Group concluded that the following points which emerged from the study were of particular significance:

i. the risk of industrial action is most likely to arise in relation to proposals to privatise the gas industry, depending on the extent to which the existing structure is likely to be broken up, the lead

given by top management, and the perceived implications for job security and work practices;

ii. the cooperation of higher management is crucial; as the recent formation of the Gas Higher Management Association has shown many of them are opposed to industrial action; if they continue to cooperate, any industrial action will be significantly less effective; per contra some extreme forms of action by higher management in association with some key staff could bring about the total and immediate cessation of gas supply;

iii. it is difficult for technical and safety reasons to cut off gas supply short of the customer's meter, although some parts of the district distribution system could be cut off as a last resort; the BGC's employees will probably be reluctant to place the safety of the community in jeopardy and thus forfeit public sympathy; therefore, depending on the workers' perception of the safety risks involved there is some prospect that disruption of supply short of the customer's meter might be limited or, at worst patchy; if, as is not thought probable, the workers did take an irresponsible attitude to safety the consequences would be severe;

iv. if industrial action were to be largely confined to the non-repair of leaks on the customer's side of the meter (which could be remedied by cutting off supply at the meter or by the customer's getting the leak repaired by a private contractor) only a small percentage of domestic consumers would be affected and it should be possible to withstand industrial action for many weeks.

5.11 The Group's main recommendations are therefore as follows:

i. in considering possible forms of privatisation for the gas industry, it will be desirable to weigh, alongside all the other relevant factors, the extent to which some forms of privatisation may substantially increase the risks of industrial action;

ii. the attitudes of higher management and their key staff will be crucial and it will clearly be important to make every effort to win their support for, or acquiescence in, whatever proposed form of privatisation Ministers may decide on;

iii. in the event of industrial action both the Government and the top management of the BGC would need to exploit fully the likely reluctance of the workforce to be seen to be endangering the safety of the community, as this could limit industrial action to a scale and type which could be endured for many weeks.

5.12 The Group also makes the following detailed recommendations:

iv. the Department of Energy, in consultation with the Department of Trade and Industry and other interested Departments and with BGC, should re-examine the arrangements for giving guidance to BGC on the priorities to be given, if possible, to essential gas consumers in the event of a significant reduction in gas supplies and report to the Civil Contingencies Unit;

v. the Civil Contingencies Unit should be asked to examine the possibility of contingency arrangements to facilitate the provision of Service assistance with the maintenance of the compressor stations in the national transmission system.

Cabinet Office
15 December 1983

ANNEX

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INDUSTRIES MOST DEPENDENT ON GAS SUPPLIES

Iron and Steel

The iron and steel industry is the main consumer of non-natural gas. 20% of BSC's production involves the use of electric arc furnaces in which coke-oven gases are an important source of heat. Nevertheless, the iron and steel industry overall is still the second largest consumer of natural gas supplied by the British Gas Corporation. Over 36% of the gas used by the industry is natural gas.

In the event of a cessation of natural gas supplies, every private sector steel company's production would be badly hit, although there would be no inherent damage to plant. BSC would also be severely affected.

British Telecom

Some sophisticated electronic equipment now coming into use in BT requires uninterrupted temperature control. This may be gas dependent.

Aerospace

A reduction in gas supplies would cause serious problems even though as an energy source it is secondary to electricity.

Computers, Communications and Electronics

The IT industry is an assembly industry. However the components and other peripheral industries will be affected because gas is essential to certain processes. In particular gas is used in furnace processes, for coating printed circuit boards, in tape production and in disc coating. If there were to be a complete cessation of supplies there would be no damage to plant, and the industry could probably survive for a short while on stocks. However, eventually the industry would grind to a halt. Gas may also be important for clean air systems.

Clothing and Knitwear Industries

Gas is critical for certain steam using processes such as pressing, finishing and dying.

Mechanical and Electrical Engineering - General

A fair proportion of these industries are dependent on gas for ovens and furnaces for the heat treatment of materials, of which forging, metal cutting, annealing, soldering and brazing are just a few. The cessation of the supply of gas would have an immediate and disastrous effect on these industries. Some establishments might be able to keep going for a time using bottled gas.

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Many other industries which rely on the use of components produced by these processes, would cease production when their stocks ran out.

Manufacturing Machinery and Machine Tools

Gas is important in the heat treatment of components but subsidiary in importance to electricity and oil.

Construction and Materials Handling Equipment

Loss of gas supplies would probably affect only the smaller companies, and smaller contractors, particularly those who are carrying out heat treatment processes. Disruption would be severe within three weeks.

Electrical Engineering

The effect would be felt mainly in those sectors of the industry using gas for process heating, eg glass working in the manufacture of electric lamps, where production would cease.

Metallurgical Plant Including Furnaces, Foundry Equipment and Die Casting Machines

If a disruption in gas supplies was sufficient to bring the heat treatment processes to a halt, overall production would cease soon afterwards.

Manufacture of Process Plant

Gas is used in some processes, including heat treatment processes, and loss of supplies would have repercussive effects on total output.

Newspapers, Printing etc

Gas is used not only for space heating but for process heating and process drying plus solvent recovery.

Paper and Board Industry

The whole industry is totally dependent on uninterrupted supplies of primary fuels, including gas, uses of which vary between mills.

Glass Industry

Glass container manufacture is a continuous process. It depends on a consistent supply of energy, including gas, to fire the furnaces and to keep the plant fully operational. Any interruption in energy supplies could result in furnace damage and shut down for 12 months for re-building (stand-by generators are inadequate for maintaining production). One-third of glass container manufacture is for the food and agricultural industry, and 9% for the chemical and pharmaceuticals industry. Any interruption in the supply of glass containers for more than two/three weeks would affect users' ability to supply essential public needs.

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Gas is particularly used for the following processes:

Heating of furnaces
Heating of molten glass emerging from furnaces
Heating moulds

New furnaces are now normally dual-fired - gas or oil.

Industrial Sands

The industry is a heavy user of gas, mainly in its drying process.

Ball and China Clay

The industry is partially dependent on gas for processing raw materials.

Non-Ferrous Metals and Refractories

Some plants and processes (eg the continuous casting of copper) are dependent on gas. Withdrawal of supplies may result in closure. Many processes must carry through a 10/14 day cycle at a constant high temperature.

Motor Manufacture and Internal Combustion Engines

The industry is highly vulnerable to withdrawal of any form of energy supply. Gas is essential for paint processes.

Crematoria

Gas is almost universally used in crematoria.

Chemicals

The UK chemical industry employs 366,000. Turnover is over £16bn and the industry maintains a positive balance of trade of around £1.8bn. It produces some 30,000 chemical compounds. Most recent figures available (1980) show that about 40% of the chemical industry's energy is derived from natural gas. The chemicals and allied industries consume over one-third of total industrial sales of gas. Gas is used both for power and as a feed stock.

Disruption of production can have severe effects on the rest of industry, because most chemicals are sold for downstream uses. In addition, there is a public health requirement for goods such as detergents, soaps and pesticides.

Companies on interruptible contracts will have standby arrangements to use other fuels, but the extent of this capability is not known. Our information about 14 chemical plants in the North West is that 10 have firm contracts and 4 interruptible contracts. This suggests that the proportion of plants with standby arrangements may be as low as one third.