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DRAFT REPORT

**REVIEW OF NRA REGIONAL
EMERGENCY PROCEDURES**



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1. **AIM**

- 1.1 To review NRA emergency procedures at national and regional level and to make recommendations.

2. **TERMS OF REFERENCE**

- 2.1 The following Terms of Reference were offered:

- i. Review the integrating of each region's procedures. Do the procedures cover the full range of potential regional emergencies?
- ii. What is the degree of awareness within each region of these procedures? Do they rest in manuals and are periodically exercised or do they simply rest in manuals? What is the circulation of the procedures? What is the awareness of senior management of the procedures?
- iii. Do regions cooperate in emergency planning, and if so, how? What is the level in grading terms and organisational terms of the coordinator?
- iv. How do regions exercise for emergencies - frequency? Involvement of staff etc? How do they monitor and review such exercises?
- v. What is the head office's procedure for handling the wide range of emergencies than can occur within the regions? What is the awareness amongst directors and senior managers?
- vi. What is the resilience of NRA communications in respect of emergencies?
- vii. What are our arrangements for liaising with Government in emergency situations?

viii In the light of current Government arrangements for handling emergencies, what should the authority do in planning and structure terms?

2.2 It should be noted that in the course of the review, a far broader set of questions was necessarily asked.

3. 'WHAT IS AN EMERGENCY?'

3.1 One of the most common retorts faced by the author of this report was 'What is an emergency?'. Underlying this question was a genuine concern - the NRA regions remain unclear as to when an incident stops being simply an incident, however serious, and becomes an emergency.

3.2 So common was this question, and so varied were the opinions, that it deserves more examination.

3.3 One half of the answer lies in the attitude of your staff - a situation becomes an emergency if the staff responding treat it as an emergency. This inevitably leads to the question: do NRA staff treat incidents as emergencies?

3.4 The following anecdote, frankly told and not offered as a particular example of culpability, illustrates the point. Wessex region recently dealt with a tanker spill near Bradford-on-Tone which resulted in a category 1 pollution incident. One of the first NRA employees on the scene was the Regional Emergencies Officer - an ex-fireman - who assisted in coordinating the response. When asked whether the NRA responded promptly, he commented that there had been "a lack of urgency" and that although the incident had in fact occurred in close proximity to the Regional Headquarters and to an equipment depot, it took about two hours for the relevant staff and equipment to arrive on the scene, and longer for alleviation measures to be taken. During this period the spill had spread, watched by other emergency services who typically had been very quick to respond to the incident. As an ex-fireman, the Emergencies Officer was conscious of the difference in

attitude between colleagues in his former profession and his present colleagues. A Water Quality Officer, without prompting, was also asked to comment on the incident. His response was markedly different. He reported with confidence that the NRA reponse had been very quick and effective.

3.5 Both officers were commenting on the same incident and both gave very different and honest replies. As both cannot be right the difference is explained by attitude. An ex-fireman, through training and instinct, generally takes the attitude that an incident is an emergency until proved otherwise, and an NRA employee, in the main, does not - who is right?

3.6 First, it is conceded that outright comparisons with the emergency services is unfair. These often have to respond to incidents where there is a threat to life or to property - clearly 'emergencies' under most definitions - and the NRA seldom responds to an incident where life or property is threatened (flooding events are the principal exception and not surprisingly, the flood warning and defence departments in the regions tended to be the most professional and well organised of all departments). Secondly, the majority of incidents investigated by the NRA are insignificant and more pointedly, investigating officers, through experience and knowledge, reasonably and accurately make this assessment even before leaving the office or home. It becomes unreasonable therefore, if not absurd, to expect a Water Quality Officer to respond to every incident as a fireman might respond to a reported fire. So much is clear and not generally in disput - but what does this difference lead to?

3.7 One of the noticeable differences in NRA staff is between ex-water authority staff, and new staff, generally younger with different attitudes and different expectations. The older staff have many years service and have dealt with hundreds if not thousands of incidents during their professional lives. Experienced staff, in any organisation, suffer from the syndrome of 'creeping casualness' - familiarity does breed contempt and a sense of urgency can become diluted after the hundredth call-out to the same river. The result is an unnoticed drop in standards and the Bradford-on-Tone incident illustrates the point. In fact, both

officers were right, except that one - the ex-fireman - had higher standards against which he judged the response as 'slow'; and the second had, unnoticed, accepted lower standards and judged the response 'quick'.

3.8 How, then, can standards be maintained at a high level? First, emergencies must be clearly defined and in this, the national 'Emergency Liaison Arrangements' noticeably fail. The document, by its very title, purports to define emergencies but lists 'notifiable situations' - the two are not the same. The regions have been very sensitive to this ambiguity and in the main have defined emergencies for themselves, reporting to National Office what they consider to be significant, and not what is listed under 'notifiable situations'.

3.9 Emergencies may be defined in two ways, generally and as a category of incident. The national 'Emergency Liaison Arrangements' do not include a general definition of an emergency. A good example (coincidentally) can be found in the Wessex Regional Emergency Procedures Manual. It is quoted in full:

'A. 1.4. Categories of event in order of seriousness or disruption

a) ROUTINE

A non-serious event which by its nature is capable of being dealt with during the normal working day, therefore not covered by these procedures.

It may have:-

A known cause

A known history

A known effect causing no immediate or long-term harm

Been the subject of a current or previous investigation

b) INCIDENT

A non-serious event not significantly disruptive to normal conditions but which may require some reorganisation of priorities at local level.

c) **EMERGENCY**

An event involving a significant disruption to normal conditions which may arise with little warning, greater than that which can be dealt with by the local structure within normal routine. It requires the special mobilisation and organisation of personnel and services, including the regional support. The Emergency Controller must be informed as a matter of priority once an emergency arises. The Emergency Controller will take steps to inform the relevant personnel.

d) **MAJOR DISASTER**

A serious disruption to life or property arising with little or no warning causing or threatening death or injury to members of the public in excess of that which can be dealt with by the public services operating under normal conditions and requiring the special mobilisation of those services.

Following accepted practice this category of event shall be declared by the Police, Fire Brigade or County Emergency Planning Officer. On this declaration is made, effective control at the scene will be assumed by the police or fire service.

The Authority will continue to discharge its responsibilities and cooperate fully with advice and resources as directed by the Emergency Controller.

This may require reorganisation of priorities within the Wessex Region in support of the public services or to minimise the effects upon the authorities activities. The National Rivers Authority HQ must be informed as a matter

of priority once the authority becomes involved in a major disaster.'

- 3.10 A second way of defining an emergency is through incident categorisation eg. all category 1 pollution incidents will be deemed 'emergencies' and be treated as such. This categorisation may appear reasonable but in practice many category 1 incidents are so classified because of media interest and not because they are in themselves significant. In effect, the incident becomes a PR emergency and not a pollution emergency. Attempting to define a fisheries emergency is similarly fraught with pitfalls. Is more than one hundred fish mortalities an emergency? Clearly, it depends on the type of fish, circumstances and watercourse. Is a fish rescue an emergency? Some fish rescues are planned and some are routine.
- 3.11 Some categories of incidents, nonetheless, are indisputably emergencies. Any situation which threatens life, public health or widespread damage to property is an emergency (such situations are listed as 'notifiable situations' in the 'Emergency Liaison Arrangements'). Even in these categories, however, anomalies can be found: 'Pollution of a bathing beach' is a local authority and not specifically NRA responsibility.
- 3.12 In summary, defining an emergency, however necessary, is problematic. The national 'Emergency Liaison Arrangements' noticeably fail to define emergencies and further compound the ambiguity by listing 'notifiable situations'. These are an attempt to categorise situations, in some cases usefully, and in others without regard to many anomalies (a full discussion of the 'Emergency Liaison Arrangements' is reserved for the next section). The first task then is for the NRA to define an emergency and, as an offshoot, to re-establish which incidents (emergency or otherwise) must be reported to National Office.
- 3.13 Definitions, however, neither ensure high standards nor a sense of urgency. The second half of the answer, to the question 'what is an emergency?' may be: when your response is an emergency response, or more precisely, when your procedures have built in them, a sense of urgency.

- 3.14 In reviewing the ten NRA regions consecutively, and in a short space of time, the author of this report became aware of the differences in ethos and professionalism between the regions. What may at first have been dismissed as a question of personalities interviewed later became more a question of functional and personnel arrangements and of procedures. Put simply, those regions which maintain comprehensive formal duty rosters, clearly defined procedures, clear reporting chains, and efficient communications and control procedures exuded a sense of professionalism and evidently strived to offer a high quality service. Conversely, those regions without the aforementioned arrangements appeared lackadaisical and were keen to justify themselves with the often heard phrase 'but it works'. The obvious riposte is, of course, but could it work better? Invariably the answer is yes.
- 3.15 Proving that one region is 'better' than another because it has more formalised structures, nevertheless, is not easy. What criteria can be used? Speed of response? Some regions have difficult topography or proportionately less staff. Speed of reporting? Some regions have sophisticated IT systems, others are in the process of changing systems. Speed of communications? Some regions inherited poor systems, others have to deal with blackspot problems, others are caught between an old and a new system? Performing targets notoriously prove one thing - how difficult it is to assess the quality 'performance'.
- 3.16 Nevertheless, formalisation and clearly defined procedural arrangements do offer advantages. First, the organisation has the necessary tools in place to deal with any eventuality. Secondly, any stress on that organisation is not met with a haphazard or ad hoc response, but with purpose and direction. Thirdly, a corporate sense of professionalism is encouraged. Fourth, 'when things go wrong', the weak link can be identified and modified, and fifth, the organisation can test itself and its procedures and so introduce enhancements and improvements.
- 3.17 The second task then is for all the regions to 'get their houses in order'. It is unfair for the former to point at National Office and ask 'what is an emergency?', when on examination it becomes evident that in some cases adequate regional

procedures are absent anyway.

3.18 This section began by posing the question 'what is an emergency?'. In the course of the discussion it became evident that the question had broader implications. Two main conclusions are drawn:

- i NRA National Office must lead by defining emergencies and/or significant incidents
- ii The NRA regions must follow and examine either their own existing arrangements - specifically duty rosters and control procedures, and ask critically whether these are adequate.

3.19 As a final comment, it should be noted that in most cases this process of self-examination does take place and regions are anxious to improve the service they offer. There are no emergency skeletons in the NRA cupboard and every region has found solutions to coping with significant incidents. The difference lies in the quality of the response and in this standards do vary from region to region.

4. **THE NATIONAL 'EMERGENCY LIAISON ARRANGEMENTS'**

A. **INTRODUCTION**

4.1 The Emergency Liaison Arrangements are almost universally unwelcomed by the NRA regions. Descriptions of the document varied from 'complicated' to 'rubbish'.

4.2 The chief areas of concern are:

- a) The document should be two; one outlining procedures for the NRA regions, and one outlining procedures for National Office and Thames Barrier staff. The two are not necessarily of mutual interest.

- b) There is no clear statement of the National Office role - does it seek an operational role or does it simply want to be kept informed?
- c) What is an emergency? Not all 'notifiable situations' are emergencies. In most cases regions have largely ignored the 'notifiable situations' guidelines and use their own judgement as to what should be reported.
- d) The details of communication arrangements are unhelpfully explained and include redundancies and ambiguities.
- e) The actions by the senior office at National Office are vague.
- f) The reporting forms are too complicated, there are redundancies and not enough space is left for message writing.
- g) The contact details in the appendices are out of date.

B. SUGGESTED AMENDMENTS

4.3 Areas of concern and suggested amendments are listed in the order that they appear in the original document. This list is not comprehensive and reflects discussions with the regions as well as the author's own views.

- a) '1. INTRODUCTION'
 - i. The first paragraph reads like a statement of role and should more properly be included in the second section.
- b) '2. HEAD OFFICE ROLE'
 - i. Neither paragraph in this section provides a statement of the Head

Office role; the first vaguely describes the role of the senior officer, and the second generally describes possible liaison arrangements between National Office and external agencies.

- ii. NRA regions would welcome a clear and unambiguous statement outlining the National Office role in the event of 'notifiable situations' or emergencies (the two are not the same).

c) '3. NOTIFIABLE SITUATIONS'

- i. The sentence "... only when a situation has already triggered regional emergency reporting arrangements ..." is redundant - not all 'notifiable situations' can properly be called emergencies, and regions do not necessarily initiate 'emergency' reporting arrangements'.
- ii. The 'notifiable situations' are too long winded and may better be described in terms of the functions they relate to ie. flood warning and defence, pollution control and fisheries.

For example:

Pollution control:

All category 1 incidents.

Any other pollution incident that the region considers should be brought to the attention of National Office.

(Currently these two categories are those which are being reported to National Office anyway, regardless of the lengthy list provided in Section 3. 'Notifiable situations'.

- iii. The flood warning criteria (> 100 houses or > 5 A class roads or > 1000 hectares of agricultural land) are unhelpful - a flood may be

serious but not affect a single A class road; the significance of flooded agricultural land depends on the crop and season (some agricultural areas, for example, are deliberately flooded); and lastly, a flood may affect much less than 100 houses and still be considered serious.

- iv. The 'other flood situations' is questionable - serious flooding cannot occur in the United Kingdom without some form of warning.
- v. A brief general 'other situations' paragraph including 'any situation involving loss of life', 'widespread damage to property' etc would summarise what currently occupies more than half a page of typescript.

d) '4. REPORT DETAILS'

- i. This paragraph is redundant. It would be simpler to state: 'The following format must be used for reporting incidents to National Office' and follow with the format or reference to an appendix.
- ii. The sentence 'reports should state who else has been notified and who it is planned to notify' is irrelevant - regions frequently have to inform other agencies which are of no particular interest to National Office, and there is no space for this information in the current report format anyway.

e) '5. REPORTING MANAGER'

- i. This paragraph is redundant. The details are recorded on the reporting for anyway. Further, the sentence 'a suggested reporting form is shown at Appendix A' is unhelpful - a reporting form should not be 'suggested', it either is or is not the form which regions should use.

f) '6. REPORTING CENTRE-CONTACT ARRANGEMENTS' and '7. COMMUNICATIONS ARRANGEMENTS'

- i. These two sections might be reduced to one, and simplified eg. between xx hrs and xx hrs contact xx on xx etc.

g) '8. REPORTING CENTRES'

- i. This section is redundant. Details of the reporting centres might be included in the previous simplified section.
- ii. The sentence 'reports may not be passed via the fall-back centre under any circumstances' is inexplicable - what, then, is the function of a fall-back centre?

h) '9. AMENDMENTS TO PROCEDURE'

- i. This section should more properly be included at the end of the document, not in the middle for no obvious reason.

i) '10. LOG KEEPING'

- i. 'A spare log sheet for photocopying is included in Appendix B' - Appendix B is a blank sheet.

j) '11. MESSAGE HANDLING'

- i. This section explains procedures which might be included in a single, simplified section which would include the same procedures already outlined in the previous section.
- ii. The sentence 'all messages received under these arrangements must be ... disseminated in strict accordance with these procedures' is

ambiguous - which procedures?

k) '12. COMMUNICATIONS FAILURES'

- i. This paragraph should more properly be included at the end of the document or as an appendix.

l) '13. HEAD OFFICE CALL OUT LIST'

- i. This section does not explain which situations warrant call out arrangements, who is responsible for initiating call out, whom he or she should call out, whether the reporting centres are authorised to initiate call out and so on.
- ii. The sentence 'in the event of a call out list not being circulated on time, reporting centres are to use the last list issued' should be deleted. Call out lists are circulated on time, anything less is an admission to a lack of professionalism.

m) '14. ACTIONS - SENIOR OFFICER (HEAD OFFICE)'

- i. This section must be re-written: What does 'general liaison with HM Government, Head Office, and regions (where this is necessary under the provisions of emergency procedures)', mean? What is 'general liaison with HM Government'? What criteria should be used to involve public relations? When should the Chief Executive, Chairman or Directors be informed? Routinely? Automatically? For all reported incidents? How should they be informed? Verbally? By facsimile? When should DoE, MAFF, Welsh Office or other Government departments be informed and how? Section F. 'Arranging for any large scale military aid or other large scale mutual aid' is questionable. This sort of assistance is invariably organised under local arrangements.

n) '15. REPORT CATEGORIES'

- i. Reports are categorised as urgent or standard but no firm criteria are provided for differentiating between the two ('urgent reports will be made on operational matters requiring immediate attention by Head Office' is too vague to be helpful).

o) '17. ACTIONS - RESPONSIBLE OFFICER (RIVERS HOUSE)'

- i. The responsible officer and Head Office Senior Officer appear to have overlapping and contradictory responsibilities - the former is responsible for circulating reports to senior managers, the latter is responsible for deciding 'whether any other senior manager should be notified' (other than himself, presumably). Does this imply that the reporting officer must first contact the Senior Officer before circulating reports? It should be noted that the Senior Officer is not even mentioned under the responsible officer's actions paragraph so what is their relationship?

p) '17. ACTIONS - RESPONSIBILITIES OFFICER (RIVERS HOUSE)'
and '18. ACTIONS - DUTY CONTROLLER (THAMES BARRIER)'

- i. Neither of these sections are of interest to regional staff and should more properly be included in separate documents.
- ii. The section 'Action re messages falling outside scope of arrangements' is confusing. The first paragraph indicates that 'these procedures are intended for any urgent operational messages that need to be passed from NRA regions to NRA Head Office during the silent hours' - but no procedures are given. The second paragraph then apparently posits the reverse case (NRA Head Office to Region), refers to 'the caller' (who exactly?) and suggests that 'the caller' would be referred to a 'responsible manager' in the

relevant region. This latter procedure is unrealistic, calls are invariably referred to communications centres or their equivalents first, and calls are passed to duty officers not to managers.

- iii. The sentence 'the Duty Controller is not expected to exercise any initiative in this matter' should be deleted. Procedures are written to make initiative generally irrelevant. The sentence effectively reads like an admission of vague procedures.

q) '19. REPORTING FORMATS'

- i. The urgent and standard reporting formats are identical except that the former includes an additional front page which requires information subsequently repeated on the second page (from, NRA Region, sender's name, office, fax no. tel no.). The number of sheets is also repeated on the same page ('page 1 of' at the top of the page, and 'number of sheets including this one' at the bottom of page).
- ii. Not enough space has been made available for the message writing (less than half an inch of line space for 'date/time of occurrence' is a trivial example, but one which, nevertheless, demonstrates that the form is not user-friendly).

r) 'APPENDIX C - 24 HOUR CONTACT NUMBERS'

- i. Is this up to date? The Chief Executive's details are not, have these been amended and circulated to the Regions?

s) 'APPENDIX D - HEAD OFFICE MESSAGE DISTRIBUTION LIST'

- i. Is this up to date? Again, the Chief Executive's details are not. When should the addressees under 'other copies' receive reports?

When the Senior Officer decides they should be informed or is this decided by the responsible officer, or indeed by the Corporate Planning Officer?

C. CONCLUSION

- 4.4 The national 'Emergency Liaison Arrangements' must be re-written. One simplified document might be issued to the regions, and a second document might be issued for the use of National Office, Thames Barrier Control Room and the back-up centre.
- 4.5 Secondly, two principal issues must be addressed from which the procedures will naturally follow - what is an emergency, and what does National Office perceive its role to be?

5. REVIEW OF REGIONS

5.1 The following reference section reviews the ten NRA regions under the following headings:

- i. Introduction - giving a brief overview of the region, key statistics, general organisation and frequencies of flood, pollution and fisheries incidents.
- ii. Personnel Arrangements - examining the roles and responsibilities of the Emergencies Officer and staff; and the organisation of the three principal departments, flood defence and warning, environmental quality (pollution control) and fisheries, in relation to the operational response to incidents.
- iii. Procedures - examining the emergency manuals, their contents and practical application, and reporting procedures.
- iv. Emergency Control Facilities - examining regional control and communications centres (or alternative arrangements) and flood warning rooms.
- v. Communications - examining existing communications arrangements including radio, vodaphone or cellnet.
- vi. Equipment - examining the location of equipment depots and the availability of equipment in relation to the operational response to incidents.
- vii. Exercises - examining regional exercises and other arrangements (such as seminars) used to further procedural reviews.
- viii. Finance - examining financial arrangements in the event of emergencies.
- ix. Conclusion - summarising the region's key strengths and weaknesses.

5.2 The assessment following the review of regions highlights areas for improvement and is summarised as a series of recommendations.

YORKSHIRE REGION

1. INTRODUCTION

1. Yorkshire is the fifth largest region in the NRA and includes a population of 4.5 million. The region offers many contrasts from three national parks, the Dales, Moors and Peaks, to the industrial areas of Leeds, Bradford and Sheffield in the south, to 150 km of coastline on the North Sea. The Humber is one of the largest estuaries in the United Kingdom and is vulnerable to tidal flooding, and the Region is second only to Anglian in the areas of flood plain and of land below sea level.
- 1.2 The region's key statistics include 1,741 km of main river including 546 km of flood defences and a further 942 km of flood embankments. The coastline is characterised by cliffs with few low-lying areas and there are 75 km of sea and tidal defences including the Hull Barrier. Rainfall levels are moderately high with an average of over 700 mm per annum.
- 1.3 The Regional Headquarters is based at Rivers House, Leeds with a sub-office at Olympia House, and there are area offices at York and Doncaster serving northern and southern areas respectively. The latter is further sub-divided into a central and southern area. The former is divided into a western and eastern area. These sub-divisions relate principally to the Water Quality department. A main depot is located centrally at Riccall and there are smaller depots at Thirsk, Pickering and Tickton.
- 1.4 Pollution incidents occur mainly in the industrial southern areas (Yorkshire includes the cleanest and dirtiest rivers in the NRA), with a smaller proportion of farm based incidents. During the financial year 1989/90, there were 2,464 recorded pollution incidents of which 180 were categorised as serious. The incidence of serious flooding incidents has diminished in recent years with the construction of extensive flood defences throughout the region but flash floods in

the Peaks and Dales, fluvial flooding in some central and southern urban areas and tidal floodings in the Humber Estuary remain a threat. In the financial year 1989/90, there were 17 flood warnings issued to the Police, the second lowest number in the NRA. Lastly, Fisheries face the twin threats of pollution based fish kills and some poaching with 34 recorded fish rescues during the same period.

2. PERSONNEL ARRANGEMENTS

- 2.1 Yorkshire Region currently have no dedicated Emergencies Officer but expect to appoint one in the near future. The role is currently being fulfilled by the Flood Defence Coordinator whose principal responsibilities as Emergencies Officer include 'trouble shooting' and the maintenance of a Senior Duty Officers' manual and Defenco Manual. The Flood Defence Coordinator reports to the Flood Manager and is not himself responsible for any staff.
- 2.2 The region do not run a Regional Communications and Control Centre and alternative arrangements are dual: during office hours incoming telephone calls are received by the Rivers House telephonists (also known as Park Square Control) and are generally passed directly to the relevant departments at area level. In some cases the call would be logged and a relevant complain form be completed. Yorkshire Region encourage all incoming calls to come directly to the Park Square Control by publicising only one number and the telephonists are administrative staff directly employed by the NRA.
- 2.3 During out of office hours, coverage is provided by Defenco contract staff. It was reported that the permanent members of the duty team work exclusively on the NRA contract and that they show considerable loyalty towards the Authority. The arrangement is extremely cost-effective, the service costs a projected £32,000 for 1990/91 compared with an estimated £102,000 for NRA in-house staff, and there have been a negligible number of complaints.
- 2.4 The principal responsibility of the Defenco staff is to ensure that the main

switchboard is manned between 1800 and 0800 hours (out of office hours calls to the Yorkshire office are diverted automatically to the Regional Headquarters through the British Telecom service, and the Doncaster office will soon share in this facility). Additional responsibilities include providing security for Rivers House, monitoring alarms and television screens and minor administrative duties. To ensure that the principal responsibility of manning the switchboard is not neglected, two procedures relating to alarms and telephones have been established. All alarms are categorised as urgent and non-urgent; in the former case a Defenco mobile patrol visits Rivers House (Defenco staff are required to log with the central Defenco Control Room every half hour anyway); and in the latter case remedial action can be taken during the next working day. Secondly, all telephones are on a repeater system which allows Defenco staff to use any telephone within Rivers House (incoming calls are automatically re-routed through the main switchboard). All incoming telephone calls are logged manually and copies are retained by the Administration department, Emergencies Officer and Investigating Officer - this has been found to be the best method of ensuring that all interested parties are kept informed and that any faults in the procedures are corrected.

- 2.5 Yorkshire Region run nine duty rosters to guarantee the availability of key personnel on a 24-hour basis. These include: a Senior Duty Officer, Regional Flood Duty Officers, area Flood Operations Officers north and south, area Pollution Control Officers west, east, central and south, and a Hull Tidal Barrier Incident Officer.
- 2.6 The principal function of the Duty Senior Officer is to deputise for the Regional General Manager until such time as either the relevant function head or general manager is available to take over. Incidents which might be reported to the Senior Duty Officer include: significant pollution of watercourses or of potable sources, major floodings, and incidents likely to arouse wide media or political interests. Until relieved, the Senior Duty Officer gives any necessary assistance to the officers dealing with the incidents, acts as a focal point for any media interest, authorises any expenditure or actions which are beyond the delegated

powers of those officers dealing with the incident, and he informs the National Office if necessary. The Senior Duty Officer is contactable by pager and portable telephone, and is expected to remain within 1 1/2 hours travelling distance of the Regional Headquarters.

- 2.7 The Regional Flood Duty Officers operate either from the Flood Control Room at Rivers House, or from home. The officers can be contacted by pagers (which are integrated into the telemetry alarm system), have the capability of monitoring telemetry over PSTN lines, and will receive, in the near future, sophisticated lap top computers which will allow them to monitor weather radar, poll outstations, access flow-modelling data, and make predictions. The principal functions of the Flood Duty Officer are to monitor meteorological conditions, operate flood room equipment and produce, but not disseminate, flood warning forecasts.
- 2.8 The area Flood Operations Officers have sub-regional boundaries and responsibilities are split north and south. The principal functions of the Flood Operations Officers are to liaise with the Regional Flood Duty Officers, manage the Flood Defence network and to deploy NRA vehicles, plant and equipment. The Flood Operations Officers are also responsible for issuing warnings to the Police and to other emergency services. They also have contacts with outside contractors in the event that additional labour, plant or equipment is required (in-house manpower and resources generally suffice), and they also act as the NRA interface with the public.
- 2.9 The Hull Tidal Barrier Incident Officers are a specialised team. Two contract engineers, an NRA Technical Officer and Yorkshire Water Authority electrical maintenance specialist are responsible for commencing emergency working when forecasts of high tide and storm surges meet the initiating conditions for barrier operation. The officers also warn all navigational interests that the barrier will be closed and that traffic passing between the Humber and the River Hull will be interrupted. Additionally, these officers are responsible for ensuring that the barrier is successfully closed and for opening the barrier again when the risk of flooding has passed.

- 2.10 Area Pollution Control Officers also have sub-regional boundaries and are divided into northern, central and southern teams. The northern pollution control area is the same as the northern flood defence area, but because of the large population and industrialised character of the remainder, there are also central and southern areas in order to balance the workload between area teams. The northern area is sub-divided into a western and eastern area. Yorkshire have a stated target time and aim for a Pollution Control Officer to attend an incident within one hour during working hours and within two hours outside normal working hours. All Pollution Control Officers' cars are fitted with carphones and Duty Officers are required to carry pagers. Usually Duty Officers would attend an incident themselves but delegation to other officers with specialised knowledge of the area and assistance from neighbouring staff are all practised options. Specialist staff might include Fisheries, The Biological Services, Engineering Support Services, Public Relations, Administration, and the Analytical Laboratories. The distribution of Pollution Control Officers is even with 28 based at Olympia House, Leeds and with 20 based at each of the area offices at York and Doncaster.
- 2.11 The Fisheries department do not run a formal duty system but all staff are effectively on standby and operational boundaries are shared with Pollution Control staff.
- 2.12 Lastly, Yorkshire Region have formal arrangements for a Regional Environment Emergency Group. The main role of the group is to coordinate the regional and national aspects of the action needed to resolve an incident from a pre-designated Park Square incident room. The membership of the group may vary from one emergency to another and would be determined by the nature of the incident. It would, however, be chaired by a member of the Environment Senior Management Group, who would have a number of Senior Managers helping to control the activities of the group. Liaison Officers would also be available to help with administration, media and emergency contacts. The key members of the group would include: operations, administration and technical liaison support, responsible for supporting the action required at the incident site (Environment

Manager, Regional Pollution Control Manager, and Environment Scientist); Media Liaison Officer; and Emergency Liaison Officer, responsible for external emergency services liaison and communications.

3. PROCEDURES

- 3.1 Yorkshire Region maintain a Regional Emergencies Manual, 4 area Pollution Control Manuals, 6 Flood Warning and Defence Manuals, a Senior Duty Officer's Manual and a Defenco Manual. All manuals are comprehensive, user-friendly and are updated by the relevant core functions.
- 3.2 The latter two manuals are specific to the Senior Duty Officer and Defenco staff and are updated by the Emergencies Officer. The Regional Emergencies Manual covers matters of general interest including definitions of incidents and emergencies, the general responsibilities of duty personnel, liaison with external agencies, national reporting procedures, and individual sections for each of the core functions. This manual provides the basis for the area manuals.
- 3.3 Pollution Control staff maintain manuals for each of the areas based on the regional manual but with additions specific to their areas. Each manual contains a definition of emergencies, details on pollution control operations and the control of significant/routine incidents, procedures for office and out of office hours, and procedures for the Regional Environment Emergency Group. The appendices include internal and external contacts, a map of pollution control areas, specimen logs and action check lists and flow charts.
- 3.4 During working hours a report of an incident would be received either at the Park Square office or, less commonly, at the relevant area office. The telephonists automatically pass the caller to a Senior Pollution Control Officer or, if he is unavailable, to any available Pollution Control Officer. Incoming calls may also be received by the Technical Support section and would, in this case, be recorded by a Technical Support Officer or Technical Assistant. Details of the reported

incident would then be passed to the relevant district level Pollution Control Officer. The investigating officer is responsible for making an assessment of the seriousness of the incident - regardless of the nature of the incident.

- 3.5 If the incident is not serious, the Pollution Control Officer would investigate in the normal manner until the conclusion of the incident. Internal liaison is with the Senior Pollution Control Officer who may assist in providing any support services (laboratory or Flood Defence manuals or equipment, for example). The Senior Pollution Control Officer also liaises with and organises any necessary contacts with Fisheries Officers, Yorkshire Water Plc, Government bodies such as MAFF, and other miscellaneous bodies.
- 3.6 If the incident is serious (for example, if a water supply catchment is affected), the Pollution Control Officer would alert the Senior Pollution Control Officer, the appropriate area and/or reservoir grid management, Flood Defence support teams, if required, and the appropriate area Fisheries Officer. The Pollution Control Officer would then deal with the incident, using additional staff as necessary, and the Senior Pollution Control Officer would act as the Field Operations Controller with overall control vested in the Pollution Control Manager. The former maintains contact with field staff and the field controller, liaises with the laboratory staff and Emergencies Officer, advises the appropriate area and/or reservoir grid management, obtains manpower and equipment support as necessary, liaises with Fisheries staff and downstream users, and activates the Regional Environment Emergency team if necessary.
- 3.7 During out of office hours, the incoming call is recorded by Defenco staff and details are passed to the area Duty Pollution Control Officer. If the incident is not serious the officer will deal with the incident himself but he may ask Defenco staff to call out additional duty staff (chemists or Fisheries staff). He would also instruct Park Square to inform downstream users and he would report to the Senior Pollution Control Officer who would ask Park Square Control to alert other duty personnel (Flood Defence support teams, chemists, Fisheries staff). The latter's duties would be similar to those during office hours and in general

terms, he would be responsible for the management of field operations. In both office and out of office hours, serious incidents are reported to the PR office which follows a proactive policy and which issues statements as necessary. Post-incident reports are generally in manual form but an electronic operations management system is also maintained to store data.

- 3.8 Flood warning and operations manuals are maintained at area level and comprise six volumes: general organisation and communication, southern area, southern area operational appendices, northern area, northern area operational appendices and Hull Tidal Barrier operations. The manuals contain details of individual responsibilities, routine matters, the operation of outstations, information gathering and transmission, alarm types and their handling, threshold alerts, flood forecasting, and include appendices on specific reaches, flood prone areas and catchments.
- 3.9 The Flood Duty Officer at regional level is responsible for monitoring meteorological conditions using local weather radar data, national weather data and specialised services such as the East Coast Storm Tide Warning Service. If weather conditions suggest a likelihood of flooding the Flood Duty Officer would be expected to monitor systems from the Flood Warning Room - he remains, nonetheless, contactable by pager or telephone. In those cases where the Duty Officer starts to monitor conditions from home, he may call out a reserve officer to open the Flood Room and would join him once he is satisfied that the systems are being monitored. Additional reserves may be called on a 'catch as catch can basis'. The forecasting system (shortly to be changed) is based on threshold levels. When these are reached, the area Duty Flood Operations Officer is called out and the latter is responsible for liaising with the Regional Forecasting Centre and for issuing warnings to the Police and other emergency services according to the national guidelines.
- 3.10 In the event of emergencies (such as pumping station failures or breeches of embankments), the area engineer has overall responsibility for the control of the incident on site. He may be supported by a safety officer; the area manager who

liaises with the Flood Defence Manager, Environment Manager who arranges for the provision of special equipment through the Engineering Support Manager; and the Emergencies Officer who coordinates any emergency action as required. It was reported that the success rate of the dissemination of warning varies from area to area. In York, for example, a detailed joint Police/local authority/NRA flood warning plan has been established to ensure that every threatened property may reasonably receive a warning. In other, less high-risk areas, dissemination procedures are not so comprehensive.

- 3.11 Fisheries staff operate closely with Pollution Control staff and are organised on a northern and southern area basis. Each area is run by an area Fisheries Officer who controls two senior inspectors and between 4-9 inspectors during office hours, reports of fisheries incidents are received from a variety of sources (Park Square Control, via Olympia House, via Pollution Control Officers and direct to area offices). The call would be initially logged by the area Fisheries Officer but if he is unavailable, a cascade system is used. In normal circumstances, the incident is directed to the most appropriate Fisheries Inspector ('patching' is encouraged). During out of office hours, Defenco staff maintain lists of Fisheries Inspectors who effectively are on standby 24 hours a day.

4. **EMERGENCY CONTROL FACILITIES**

- 4.1 Yorkshire do not run a Regional Communications Centre and alternative arrangements are described in Section 2. Personnel Arrangements. A Flood Warning Room is maintained at regional level and incident rooms may be opened both at regional and area levels, although the former facility is seldom required.
- 4.2 Flood room technology is managed by Yorkshire Region's Information Technology Department and is in the process of a modernisation which will give the region one of the most sophisticated information technology and telemetry systems in the NRA.

- 4.3 Information technology currently available includes the Vax all-in-1 office automation system at area level, incorporating normal word processing as well as electronic logging and mailing (the system offers many other facilities such as Dec Graph, Dec Calc and Lotus 1-2-3). These facilities are provided on the digital Vax 6310. Real-time computer for the regional telemetry scheme is provided on industrial Vax 620 or Microvax 2000 at area level, and the flow forecasting system is based on the Microvax 3900 and VMS operating system. Nodes exist at the Yorkshire Water Services Headquarters at Bradford as well as at all NRA offices, sub-offices and depots (Leeds, Doncaster, York, Riccall, Thirsk, Pickering and Tickton).
- 4.4 The principal functions of the Regional Telemetry System (RTS) will be to acquire data from geographically remote sites, present the information to a variety of users, enable the control of geographically remote plant, enable the archiving of data to the Regional Operational Database (ROD) for later use, and provide data for the river flow forecasting system. The RTS was developed for the NRA by Logica and is based on the 'Master Control 2000'. This system controls the polling of outstations (for river level, water quality, temperature), the detection of significant changes, the notification of significant changes (alarms), the logging of data, and the presentation of graphical and pictorial presentation of data. The data is acquired by telemetry outstations which collect, store and process the data and alarm data is retrieved via PSTN, either on request or automatically on two dedicated data gatherers, on a once daily basis. The presentation of the data is made available to users at workstations with several pictorial formats available: static background and dynamic data foreground, graphical plots of time series data (level versus time hydrographs), and summary listings of point and outstation details. In addition to the daily polling, rapid automatic polling is initiated at certain threshold levels.
- 4.5 The River Flow Forecasting System (RFFS) will be principally available for flood warning and river control but will have secondary applications for pollution monitoring and drought management. The model shell (again designed by Logica) will include data acquisition, data handling, reporting and a telex/fax

facility. The forecasting modules will cover all the Yorkshire Region and provide forecasts at up to 250 sites. Data is obtained from the RTS, weather radar data, telexed Met Office synoptic forecasts, manually entered data, and from long term forecasts (predicted tide levels and long term rainfall profiles). The Met Office forecasts are based on 7 hydrometric areas and the telex facility allows onward transmission. The RFFS interfaces with external systems including RTS, ROD, the Ingham and Hameldon radars, operators and users and alarm transmissions. Rainfall run-off, channel flow, hydraulic models and snowmelt modelling will complete the data acquisition. In operational use, the RFFS will provide a routine daily forecast, record the receipt of alarms locally, make use of this record for further processing, for example, to use in conjunction with an alarm combination table, escalate alarms if necessary to the Duty Officer and ask 'RTS' to carry out polling of 'associated' outstations in anticipation of a user requested forecast run. The latter may be from one hour ahead up to several days ahead. The alarm combination table will be intelligent; for example, if a rainfall alarm is received from Malham, the RFFS will interrogate Malham and find that it should obtain data (via RTS) from say Gargrave and Kilwick river stations. If in this example, Gargrave and Kildwick levels are 'high', the RFFS will generate an alarm.

- 4.6 The principal difference in uses will be between the model operators and the operational users. The former will assess the initial situation by viewing RTS data and pictures, RFFS graphs, weather radar pictures, the latest Met Office forecasts and obtain data in advance of forecasts runs. The forecast runs may be carried out for specific catchments, or generally using a 'what-if' type modelling. The model operators will then be able to re-assess the situation in the light of forecasts and disseminate the most up to date forecasts to area Duty Officers. These will receive graphical results, receive other reports and general automatic telex/fax messages. Lastly, archive data will be available, either from the eight days storage capacity on RTS or from the transfer of data to the regional operational database archive.

5. COMMUNICATIONS

- 5.1 Yorkshire Region still run an outdated VHF radio system at area level during office hours only, but it has been almost entirely supplanted by vodaphone. The radio network was inherited from the previous water authority and is expected to be replaced over the next 12 month period with joint trunked PMR.
- 5.2 Vodaphone generally provides excellent coverage and there are few blackspot associated areas. During the significant flooding of February this year Raynet, the British Amateur Radio Association, assisted in establishing a communications service and their service was described as 'excellent'.
- 5.3 Regarding telephone communications, all Leeds area offices are on an internal ISDX system and other area offices are on 'Herald' systems.
- 5.4 Fisheries staff are all issued with pagers but not vodaphones and an 'Aidcall' system is used for Fisheries Officers working alone on trout farms. In anti-poaching operations, short range hand held radios are held and a good relationship with the Police allow staff to leave transceivers at police stations.

6. EQUIPMENT

- 6.1 Yorkshire run a main depot at Riccall and have smaller depots at Thirsk, Pickering and Tickton. The Riccall depot is managed by an Engineer Support Manager, as a separate cost centre and contains regional stores, NRA vehicles and emergency stores. The depot acts as an interface with local contractors.
- 6.2 During the significant floodings which occurred in February this year, the centre reportedly provided an excellent service to the extent that many offers of help had to be rejected.
- 6.3 Pollution Control maintain three trailers with equipment for contingency and/or

emergency operations and the region reported holding sufficient booms to protect all the principal tributaries of the Humber Estuary. It was conceded, however, that any major pollution in the estuary itself would require external assistance and arrangements have been made with Humberside County Council and MPCU.

7. EXERCISES

7.1 Yorkshire run a programme of exercises. To date this year, staff have participated in one major pollution and one major flood defence exercise. The former was organised by Associated British Ports and simulated tanker spill in the Humber. The latter, 'Exercise Three Crowns' was run by the NRA Emergencies Officer and included participation by Humberside County Council and Hull City Council. The region expect to run a second flood defence exercise later in the year to test new telemetry systems and are planning a further exercise testing all core functions in 1992.

7.2 Yorkshire Region have also participated in smaller exercises with Leeds Oil Corporation and other chemical companies.

8. FINANCE

8.1 Yorkshire Region did not report any financial constraints which might affect emergency operations.

8.2 Arrangements for authorising unforeseen expenditures are proceduralised in the relevant manuals.

9. CONCLUSION

9.1 Yorkshire Region have a positive attitude towards emergencies and to the

operational response to incidents in general. Procedures are both well considered and documented in comprehensive manuals down to area level. The one hour response target time and the existence of nine duty rosters are good examples of Yorkshire Region's commitment to a professional service.

- 9.2 The region do not run a Regional Communications Centre but alternative arrangements have proved to be both efficient and cost effective. In the near future, the region hope to introduce probably the most sophisticated information technology and telemetry systems in any of the NRA regions. With the appointment of a dedicated Emergencies Officer, the region should be able to build on the high standards which they have already set themselves.

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NORTHUMBRIA REGION

1. INTRODUCTION

- 1.1 Northumbria is the smallest NRA Region encompassing an area of 3,600 square miles and with a population of 2.6 million residing in the counties of Northumberland, Tyne and Wear, Durham, Cleveland and small parts of Cumbria and North Yorkshire.
- 1.2 As smallest of the regions, Northumbria is managed by only 150 employees. The Regional Headquarters is at Eldon House, Gosforth, just north of Newcastle Northern area, is based at Claydon House, Gosforth and there are depots at Wooller and Blaydon. Southern area is based at Darlington and there is a depot at Crook. In addition to these, minor Fisheries offices are maintained at Blaydon and at Kielder. A laboratory based at Washington provides modern facilities for testing samples taken throughout the Region. Each area is functionally represented by an Engineering Manager, Principal Pollution Officer and area Fisheries Officer. The former has general administrative responsibilities in addition to his functional responsibilities.
- 1.3 Functional boundaries are not concurrent but the geographical size of the region is such that there is no confusion over responsibilities. The northern border with Scotland, however, is delineated by the River Tweed and is affected by varied legislation depending on the function. The River Tweed is also unique in having a dedicated flood warning service and river bailiffs organisation, the Tweed Purification Board and Tweed Commissioners respectively.
- 1.4 The region's key statistics include 1,643 km of main river and a short 193 km coastline. The average annual rainfall is moderate to high at 875 mm and snowmelt remains a significant problem. There are a total of 310 km of constructed flood defences.

- 1.5 The region is heavily industrialised in the south-east and includes Europe's largest petrochemical complex as well as the UK's second largest port and team valley at Gateshead, Europe's largest industrial estate. Domestic sewage on the Tyne and industrial effluents on the Tees have both been significantly reduced and there is only a small threat from tidal flooding west from the coastal conurbations towards the Pennines, the area becomes more sparsely populated with rivers rapidly improving in water quality. There are localised flooding problems and the main risk of pollution arises from farming.
- 1.6 During the financial year 1989/90 the region recorded 792 pollution incidents of which 41 were categorised as serious. During the same period Fisheries staff attended 35 pollution related incidents and undertook only 2 fish rescues. During the last flooding season only 3 flood warnings were issued.

2. PERSONNEL ARRANGEMENTS

- 2.1 Northumbria currently have no dedicated Emergencies Officer and the Area Engineer north has taken a dual role as emergency coordinator. As coordinator he has overall emergency related duties but unlike some other regions, is not responsible for a control or communications room, has no liaison duties and is not responsible for the update of emergency related manuals or procedures. He does, however, remain responsible for contract security arrangements and he reports to the Flood Defence Manager.
- 2.2 Northumbria recognise that a dedicated Emergencies Officer should be appointed in the long term but two factors prevaricate against this appointment in the near term. Firstly, the region is both geographically smaller and comparatively quiet (Severn Trent, for example, is just over twice the size but records over six times as many pollution incidents and over one hundred and fifty times as many flood warnings). The urgency then to appoint an Emergencies Officer has been absent.
- 2.3 Secondly, the region is facing organisational changes in 1993/94, as well as a

recruiting drive in the near future, which will alter the manner in which it operates. In 1993, leases on the regional and northern area offices expire and new premises and possibly a restructuring are currently being considered. In 1994 the region may assume responsibility for the Tees Barrage which will include a control room. One proposition is that the region will appoint an Emergencies Officer and staff at this stage and that the Regional Communications Centre will be co-located with the Barrage control room. With key decisions yet to be finalised, it is considered inappropriate to establish a dedicated Emergencies Officer, staff and Communications Centre in the near term.

- 2.4 Alternative arrangements to a communications centre include the use of receptionists, during office hours (0830 to 1800 hrs, but this period is shortly to be extended from 0700 to 2200 hrs) and of contract security staff during out of office hours.
- 2.5 During office hours, Northumbria region is represented by the receptionists at Eldon House, Gosforth. Incoming calls are received on a local charge STD number (there is no freephone number) and are passed directly to the Darlington or northern area office at Claydon House. At the latter two, the call is handled by a Technical Assistant or Secretary who records the information on a pollution incident investigation form (if appropriate) and the relevant Pollution Prevention Officer is informed. Calls may be received directly at the areas offices but these numbers are not publicised.
- 2.6 During out of office hours all incoming calls are re-routed on a dedicated line to the Group 4 Control Room at Gateshead. The security staff are responsible for recording the details of the call on a simplified incident investigation form and for informing the relevant area duty Pollution Prevention Officer or area Flood Warning Officer in the case of telemetry alarms. If an incident has been running during the day, the switchboard at the reception area in Eldon House would be kept open and the Group 4 Control Room would be informed. This arrangement prevents any confusion arising during out of office hours with Group 4 Controllers having to receive calls relating to an incident of which they have no knowledge.

The system is very cost effective and the frequency of incidents do not support anything other than what is being run at the moment. Unlike North West Region which runs a similar system based on the Bristol BT service call, North East are confident that incidents are responded to quickly (the former region has no duty Pollution Officers and relies on a cascade call-out system).

- 2.7 Pollution prevention staff are organised under two area Senior Pollution Officers. These are responsible for three Pollution Officers each of which is supported by assistants. Current staffing levels do not allow 'patching' responsibilities. During office hours there is no duty roster and the Technical Officer uses a weekly list of available Pollution Prevention Officers for the investigation of pollution reports. If an officer on the list is unavailable due to other commitments, a cascade call-out system is used. During out of office hours an area duty Pollution Prevention Officer is available to investigate reported incidents. An alternative officer is also named and if both are unavailable, Group 4 Controllers may use a cascade system until an officer is successfully informed. It should be noted that out of office hour incidents have never warranted using the cascade system.
- 2.8 Flood Warning and Defence staff maintain six duty officers, each on duty for one week at a time, 24 hours a day (the officers are drawn from Water Resources, Flood Defence and Water Quality). In the event of forecast or actual flooding, the duty officer makes the necessary manning arrangements with another member of the duty officer team including communications and Flood Warning Assistants.
- 2.9 Fisheries are organised on an area basis under a Fisheries Officer. The officer is responsible for a Fisheries Inspector, seven bailiffs and a Scientific Officer with two Assistants. The southern area officer is additionally responsible for an Assistant Fisheries Officer and the NRA Patrol Vessel (used to monitor offshore salmonoid fishing up to 6 miles offshore).

'Patching' is encouraged but most fisheries emergencies require teamwork and would be coordinated under the Head Bailiff. The Patrol Vessel has a two-man crew and reports directly to the southern area Fisheries Officer.

3. **PROCEDURES**

- 3.1 Northumbria do not maintain a Regional Emergencies Manual or Regional Equipment Schedule. Nevertheless, given the size of the region, both the existing Pollution Operational Procedures Manual and Flood Warning and Defence Manual effectively cover those procedures which might be included in a regional manual.
- 3.2 Pollution procedures are outlined in the Pollution Investigation Procedures and Enforcement Policy Manual, a copy of which is issued to each Pollution Prevention Officer. The manual is divided into three principal parts: pollution investigation procedures, pollution prosecution procedures, and contact telephone numbers. The bulk of the document, however, comprises appendices which include details of notification and investigation, records and check lists, equipment schedules, copies of report forms, and specialist procedures such as dealing with oil pollution in Berwick Harbour. Noticeably, there is no copy of the national 'Emergency Liaison Arrangements' in the manual.
- 3.3 Pollution investigating procedures are simplified and sequentially explained. The tasked Pollution Prevention Officer is responsible for assessing the nature, extent and likely effects of the incident and of advising other departments and third parties, if appropriate. In the case of significant incidents, the investigating officer may inform the Senior Pollution Prevention Officer, a second Pollution Prevention Officer or Environmental Quality Manager who would act as incident controllers. Out of office hours the duty officer may contact a second duty officer for assistance or, if he is unavailable, the Pollution Prevention Officer for the area, the area Senior Pollution Prevention Officer, PPPO or EQM in that order. A pollution incident checklist is provided to ensure that investigating officers do not omit any essential affected parties.
- 3.4 Internal liaison links are maintained with Fisheries in incidents involving fish mortalities or other fisheries interests; hydrologists when times of travel estimates, flow data and advice on water releases is required; hydrogeologists when advice

on boreholes, springs, surface abstractions and groundwater is required; and flood defence in incidents involving oil pollution clean up, dam watercourses or pumping stations. Conservation staff might also be informed in incidents involving SSSIs.

External agencies which may become involved include MAFF, port authorities, waste disposal authorities and The Water Research Centre which specialises in toxicological advice.

- 3.5 Reporting procedures ordinarily rely on the completion of the pollution incident investigation record form which is initially used to record details of the reported incident. In major incidents verbal updates are provided and a full incident pollution incident report is expected within a three-day period. An incident room may be opened to receive reports and coordinate field staff but no incident to date has been of such magnitude that it has required the opening of an incident room.
- 3.6 Flood warning and defence procedures, though seldom practised, are clearly delineated in the Operational Procedures Manual. Active monitoring of telemetry systems would normally begin following heavy rainfall warnings from the Newcastle Meteorological Office or following extreme weather warnings from the National Meteorological Office (there is no weather radar). Activation of river level alarms would also require monitoring by the duty officer.
- 3.7 Northumbria maintains a simple but functional telemetry network. There are only 42 river gauges and 16 rain gauges (both based on the dynamic logic outstation system) of which 12 are fitted with alarms. In the near future the number of alarm gauges will rise to 25. Alarms are monitored by the Group 4 Control Room who remain responsible for informing the duty officer on receipt of an alarm. The duty officer is contacted by telephone, pager or vodaphone and is responsible for polling stations individually over PSTN lines. In the future, alarms will activate a pager carried by the duty officer but he will still be required to check which alarm has activated through Eldon House or the Group 4 Control Room. Forecasts are subsequently based on river levels and flow manual graphs

and a four hour prediction service is the normal criteria. In comparison with other regions, then, Northumbria's telemetry is crude. However, the threat from floods is so minimal - using a 1-in-50 year return period criteria, and assuming every main river were to flood, only 200 properties would be affected - that Northumbria assess the present system as adequate to their needs.

- 3.8 The tidal flood warning procedures are similarly simplified. Surge warning data is normally received 36 hours before the predicted surge conditions. An east coast storm tide warning service would normally be received within the next 24 hour period. The alert confirm or stand-down is received within four hours of the predicted conditions. If the warnings exceed pre-determined criteria a telexed flood warning is issued to the Police and to the Middlesborough, South Tyneside or North Tyneside Local Authorities. Two tidal gauges will be installed in the near future to enhance the tidal warning service.
- 3.9 In all cases messages received and issued by the duty officer are recorded in an incident log book. Formal yellow alerts may be issued to Police forces from home by use of a portable telefax and are confirmed by telephone. All other formal alerts require the opening of the incident room.
- 3.10 On opening the incident room, the duty officer is responsible for arranging the necessary manning levels, informing the reception to re-direct calls, informing the relevant Police forces that the room is open (both by verbal and telexed message); informing the Group 4 Control Room; and setting up to 2 portable micro computers. Liaison with outside agencies might include informing the Newcastle Weather Centre and MAFF. The duty officer would also be responsible for liaising with Flood Defence staff, Public Relations and with National Office.
- 3.11 The duty officer effectively fulfils the role of flood forecaster and has complete responsibility for management of the incident room including data acquisition, forecasting and issuing of warnings, and the allocation of duties to assistants. He is also responsible for the issue of flood warning messages and for the stand-down.

3.12 Lastly, a procedure involving the Water Resources department is worth noting. In the event of a major pollution incident on a main river, exceptionally low flows, or following incidents resulting from river regulation, the duty officer in liaison with the Water Resources incident manager, would make the decision whether to authorise a release from an upstream reservoir source. The aim would be to encourage the pollution slug to pass abstraction points quickly and to dilute the pollution effects.

3.13 Fisheries staff do not operate duty rosters. During office hours, reports of fish mortalities would normally be received from Pollution Prevention Officers at area level, by the Fisheries Officer, who would contact the Head Bailiff. The latter would then be responsible for organising the operational response. Logging in and out is via the Head Bailiff.

During out of office hours, Group 4 Controllers may use a Fisheries personnel list to contact the relevant Fisheries Bailiff. If he is unavailable, a cascade system is used until a bailiff is successfully informed. More commonly, Fisheries staff would be informed by the duty Pollution Prevention Officer who would himself have been contacted by the Group 4 Controllers. Logging in and out during out of office hours is via the Group 4 Control Room or via the Head Bailiff. There were no reported instances of lost staff during anti-poaching operations.

Lastly, no special procedures are established for the patrol vessel which remains in contact with the southern area offices via cellphone.

4. EMERGENCY CONTROL FACILITIES

4.1 Northumbria currently does not run a Regional Communications Centre nor is a permanent flood warning room maintained. Neither are assessed as necessary in the near term but arrangements may change in 1993/94 for reasons discussed in Section 2. Personnel Arrangements.

- 4.2 A regional incident room is available but is seldom used (Pollution staff reported never having used the room and there were only 3 flooding events over the last season). The incident room is equipped with seven external direct lines and five internal lines and would be used to monitor the two flood warning computers and for liaison. With no regional radio network and no dedicated emergency staff or controllers, little need is perceived for anything other than this basic facility.

5. COMMUNICATIONS

- 5.1 Northumbria has no radio network and relies entirely on cellphones and pagers. With only 150 staff there is no immediate perceived requirement for a radio network. Nevertheless, the region are liaising with Northumbria Water Plc and may become joint users in a new trunk PMR system which is expected to be established in the near future.
- 5.2 Blackspots are reportedly a problem of isolated areas of the Pennines and the Cheviots but these can be alleviated using cross band repeaters.
- 5.3 All Fisheries staff are equipped with both short range radios and cellphones. The former are primarily used in anti-poaching operations.

6. EQUIPMENT

- 6.1 Northumbria maintain equipment depots at Crook, Blaydon and Wooller. These were reported as adequate for the region's needs and local contract arrangements are unusual.
- 6.2 Pollution staff maintain five 'first response' trailers with booms and have established a joint boom and skimmer sharing scheme with the harbour authorities and county councils on the Tees. In the event of a major pollution incident, MPCU assistance might still be required and relations with the latter were

described as poor.

- 6.3 The region reported no outstanding equipment deficits which might affect emergency operations.

7. **EXERCISES**

- 7.1 Northumbria has undertaken no exercises since vesting but a first flood defence exercise is planned for this September. It is intended that the exercise will be in accelerated time and will involve no outside agencies. The region also reported taking no part in exercises organised by external agencies.

- 7.2 Irregular internal debriefs are held following major incidents and a seminar is planned for this October which will involve Police forces and local authorities.

8. **FINANCIAL**

- 8.1 Northumbria reported no financial constraints which might affect emergency operations.

9. **CONCLUSION**

- 9.1 Northumbria region is notable for its small size - with a staff of only 150 and an area of 3,600 square miles, the region has not had to address problems in the same manner as the large NRA regions.

- 9.2 There is no urgent requirement for a dedicated Emergencies Officer, communications room, radio network or advanced telemetry system. Nonetheless, these are recognised as potential enhancements which may be established in 1993/94 when a move to new premises, the commissioning of the Tees Barrage,

and possible organisational changes are implemented.

- 9.3 In the near term, current procedures and facilities are assessed as adequate for the region's needs.

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NORTH WEST REGION

1. INTRODUCTION

- 1.1 North West Region is the fourth largest NRA Region comprising an area of 14,445 sq km and is densely populated in the Southern half, with a total population of 7 million. The Region offers the contrast of the Lake District, a rural area of outstanding natural beauty with small farming communities, and the heavily developed conurbations of the Mersey Basin. Tidal flooding is a threat on the north west coastline, and heavy rainfall levels in Cumbria and other counties can lead to extensive fluvial flooding. Industrial as well as agricultural effluents are the major sources of pollution incidents. Lastly, the Region holds important salmon and trout fisheries and with the Lake District has a significant recreational aspect.
- 1.2 The Region's key statistics include 6,028 km of main river of which 3,414 km are class 1 and 432 km of coastline, of which 238 km are protected by sea defences.
- 1.3 The Regional Headquarters is located at Warrington, and the Region is sub-divided into three areas. South Area has two offices: Flood Warning and Defence staff are based at Sale; Water Quality and Fisheries staff are based at Warrington. Central Area has one multi-disciplinary headquarters at Preston. Northern Area has a principal multi-disciplinary headquarters located at Carlisle with a sub-office at Levens.
- 1.4 Areas are sub-divided into districts and sub-districts and each of the principal functions has divided the areas according to 'demand' or workload, catchment or 'flood zones'. The result is necessarily a patchwork of anomalous boundary divisions throughout the Region but it was not reported that these divisions caused confusion. Close cooperation at district level and the experience of the staff were cited as reasons for the successful integration of the departments.

- 1.5 In the financial year 1989/90, North West Region recorded 3,478 pollution incidents of which 525 were categorised as serious. During the same period, Fisheries staff recorded 18 fish rescues as well as assisting in a small proportion of the pollution incidents. Forty six flood warnings were issued and there were twelve fluvial and coastal flooding incidents.

2. PERSONNEL ARRANGEMENTS

- 2.1 North West Region maintain a full time Emergencies Officer who has been in post for less than a year. The Officer reports to the Technical Manager (Strategy and Services) who in turn reports to the Regional Flood Defence Manager. The status of the Emergencies Officer was discussed and it was suggested that the Officer would be better placed, independent of the functions he serves, possibly reporting directly to the Regional General Manager. This arrangement would follow the model set by most local authorities where emergency planning teams report directly to County Council leaders and are accorded concomitant status.
- 2.2 The duties of the Emergencies Officer include the drafting of emergency procedures (other than flood warning and defence manuals, no other operational manuals are currently maintained); liaison with the emergency services and local authorities; conducting and attending debriefings, the maintenance and update of an emergency plans library; and emergency training.
- 2.3 The Region have no regional communications staff and currently two systems for providing 24 hour coverage are in place. During office hours incoming calls are received directly at area level by administration staff. There is no formal duty roster, effectively whoever answers the call is responsible for recording the details on an incident reporting form and for informing the relevant officer. Contact lists and area maps are provided to assist administration staff to identify the relevant officer. It was commented that this system has weaknesses - with no formal duty roster, how can you guarantee that the call will be answered promptly? If more than one person is answering calls, how does he or she know who is available and

who is already deployed and how do district Senior Pollution Officers keep current with incidents in their areas of responsibility? - presumably via administration staff. Although it was conceded that these were justifiable concerns, it was argued that 'the system works'.

2.4 During out of office hours, Region-wide calls are diverted to the BT Bristol service call. Effectively, then, NRA North West Region is represented by a BT telephonist during the silent hours. The telephonist acts as message handler, recording details of the call on an incident report form. The details are subsequently passed to an outgoing desk where a second telephonist using contact lists attempts to inform the relevant NRA Officer (with no formal duty roster during out of office hours, the telephonist uses a cascade system until he or she succeeds in contacting an officer). This arrangement was defended primarily on cost-effectiveness. It was also noted that with more than one BT telephonist, several incoming calls may be handled simultaneously. Nonetheless, it was conceded that overall the arrangement is unsatisfactory and that the Region should not rely on BT telephonists for 24 hour coverage.

2.5 Plans to improve current arrangements have not been confirmed but the most likely option will include the employment of two additional part-time NRA staff who will work under the administration department, essentially as duty telephonists, in a yet to be established communications centre. During out of office hours, contract security staff will monitor the telephone switchboard in the new communications centre. It was commented that Welsh Region are abandoning the employment of contract security staff as an unsatisfactory arrangement. Furthermore, that it was noted by the Emergencies Officer, that it may become difficult to retain staff in the new communications centre (it was suggested that having received training and experience they might transfer to better paid jobs in an area which suffers from skills shortages). At best then, North West are 'plugging the gap' but are not finding long term solutions to the problem of establishing a properly staffed communications centre. It should be noted, in fairness, that adequate funding and not unwillingness, remains the principal obstacle to establishing a regional communications centre, on similar

lines to those run by other regions.

- 2.6 A room has been designated as the communications centre but is currently without facilities. It is planned to equip the room with telemetry, telex, facsimile, and a switchboard. The room will also double as the Emergency Officer's office and regional incident room.
- 2.7 Personnel arrangements for Pollution staff are currently subject to review following a long-standing dispute over pay. The lack of funding has prevaricated against establishing a formal roster system of duty and standby officers, and effectively Pollution Officers have been operating in 'good faith', rather than under a formal framework.
- 2.8 During office hours this informal arrangement has not reportedly affected the response of pollution staff to reported incidents: incoming calls are received by area administrative staff, the details are recorded on a pollution incident form, and the relevant Pollution Control Officer is informed. If this officer is unavailable, his assistant may be informed. Adjacent Pollution Control Officers may also be informed if both are unavailable. The Officer who investigates the incident reports to his District Manager who in turn is responsible to the Area Manager. The District Manager would, in normal circumstances, assist the investigating officer with both internal and external liaison.
- 2.9 During out of office hours, the BT telephonist uses a cascade system of contact lists until a Pollution Control Officer is successfully contacted. It was conceded that this arrangement is unsatisfactory - single men tend to be proportionally less available than married men who, understandably, feel penalised for being home bound; some officers have answerphones so effectively make themselves unavailable; some officers are reportedly unwilling to cooperate with the system until an equitable pay deal is agreed; wives and girlfriends may, in some instances, cover for husbands and boyfriends respectively; and it is not uncommon for the telephonist to work through the list unsuccessfully and resort to calling out a member of the Flood Defence department to investigate a pollution incident!

- 2.10 It is reiterated that North West Region recognise that the system is unsatisfactory but until the issue of an equitable pay deal is resolved a formal system of duty pollution staff cannot be established.
- 2.11 Fisheries staff at area level are organised under an Area Manager who is responsible for a Fisheries and Recreation Officer, Fisheries Inspector, Senior Bailiff and several teams of bailiffs. Like several other NRA Regions, North West have assessed that Fisheries staff at the operational level cannot reasonably work in anything less than four man teams and that, as much as possible, teams should 'patched' to encourage familiarity with an area. Fisheries staff, in common with most NRA Regions, do not run duty systems or formal call out arrangements (although contact lists are provided to administrative staff as well as to the BT Bristol service call), as in practice Fisheries are permanently 'on duty', except during leave periods or in other exceptional circumstances. The usual chain of response to reported incidents is through the Fisheries Inspector, to the Senior Bailiff and Area Bailiffs. All staff can be contacted by pager or by cellphone.
- 2.12 Flood warning and defence do maintain a system of duty personnel - they are in fact, the only department to do so. Duty personnel include a team of approximately fourteen Regional Duty Officers operating singly on a weekly basis; and approximately seven support officers and seven clerks, generally working in teams of two, to support the Regional Duty Officers, if required. The duty periods start concurrently at 10.00 am each Tuesday, and a Senior Duty Officer, generally either the Water Resources Manager or Flood Defence Manager is also appointed. The Regional Duty Officer is accessible by telephone and pager; has access to telemetry data which is updated every fifteen minutes; receives alarms from the telemetry when level and rainfall 'trigger' thresholds are reached or forecast, or when warning and flood levels are reached or forecast; receives rainfall, gale and surge warnings from the Meteorological Office; and holds daily conferences with the Meteorological Office. When there is a likelihood of flooding, the Regional Duty Officer monitors actual and forecast river levels, rainfall and tidal levels. He also advises the Flood Defence District Duty Officer and issues formal operation 'Neptune' and 'Albion' warnings to the police. He

may also, depending on the actual or predicted severity of the flooding, call out the second Regional Duty Officer as well as support and clerical staff, inform the Senior duty Officer and the PR Officer, and inform National Office after following a formal decision procedure which is included in the regional flood warning and defence manual.

- 2.13 The Area Duty Officers are advised as appropriate by the regional Duty Officers regarding weather, river and tidal conditions. They may also consult with the regional officers and take appropriate action when issued with heavy rain or flood warnings and advise if abnormal conditions are apparent to them. Lastly, the Area Duty Officers deal directly with local police and local authorities during flooding incidents.
- 2.14 The Duty Senior Officer is advised whenever the flood room is to be opened. The Duty Senior Officer remains responsible for advising the Regional General Manager when flooding is likely to be serious.

3. PROCEDURES

- 3.1 North West Region currently hold no regional Emergencies Procedures Manual and no Pollution Procedures Manuals. Informal Pollution Control 'bibles' do exist at district level and it was suggested that these might form the basis of formal Pollution Procedures Manuals. Draft Regional Emergency Procedures are being produced by Emergencies Officers but with no precedent (the last relevant document is six years out of date), the task is proving time consuming.
- 3.2 Flood Warning and Defence Procedures are formally established in one regional and three area Flood Warning Manuals.
- 3.3 The Regional Flood Warning Manual is a comprehensive document which includes a delineation of the responsibilities of the various relevant authorities, working arrangements and conditions, flood management and equipments, details

of the regional communications scheme, details of liaison with meteorological offices, routine and emergency procedures, details of operations 'Neptune' and 'Albion' (tidal and fluvial flooding respectively), and contact lists.

- 3.4 Area manuals are based on the regional manual (information not relevant to the particular area has been extracted and replaced with area-specific data). In addition, a greater emphasis has been placed on flood defence procedures. An Area Flood Warning Manual, for example, would include such details as the Rivington Reservoir emergency procedures, Merseyside flood warning procedures and emergency operating procedures for pumping stations. Area manuals would normally be amended by the Principal Planning Officer, the Regional Flood Warning and Defence staff in consultation with area staff.
- 3.5 North West Region's flood warning and defence procedures are based on a system of regional and area Duty Officers and on separate tidal and fluvial flood warning schemes. Details of the Duty Officers' roles and responsibilities are outlined in Section 2. Personnel Arrangements.
- 3.6 The two flood warning schemes are codenamed operation 'Neptune' (tidal flooding) and operation 'Albion' (fluvial flooding). Some areas are prone to flooding from a combination of high river flows and high tides, In these cases, whichever is the most appropriate code name is used. Flood warnings to British Rail are uniquely codenamed 'Operation Noah'.
- 3.7 The warning schemes were developed in cooperation with county emergency planning units, are integrated into county and district emergency plans, rely on both police and local authority dissemination, and aim to give a 4 hour lead warning time. In the case of tidal flooding, the warning period is usually related to 12 hour tidal patterns.
- 3.8 Operation 'Neptune' is run in close cooperation with all maritime and estuary district councils in North Wales and North West England to the Solway Firth. When tidal levels over a specific threshold are forecast, warnings are issued to all

local authorities that have a sea frontage, giving the specific height to which the tide might arise, together with forecast wind conditions. Each authority is then responsible for judging the effect that the forecast conditions will have in its area and for taking any appropriate actions. Warnings for tidal floodings are initiated by issuing an 'Operation Neptune standby' to appropriate county police HQs followed by hard copy messages giving forecast height of high tides, wind force and direction. An 'Operation Neptune stand down' message is given when the danger from flooding has passed. Yellow warnings may be given up to 30 hours before high water, amber and red warnings up to 9 hours before high water, and hourly updates are subsequently provided from 6 hours before high water.

- 3.9 Operation 'Albion' fluvial warnings are based on 13 formal schemes for high risk zones with a further 10 zones to be developed by 1994. Warnings of flooding from rivers in the formal flood risk zones are initiated by the Regional Duty Officer issuing an 'Operation Albion Standby' (or 'Flood warning standby' in the Greater Manchester area). If level forecasts continue to rise, 'Operation Albion' alarms are issued for each stage of the forecast flood, followed by an 'Operation Albion stand down' when the danger from flooding has passed. Specific alarms are given for each specific stage of the flood as it is forecast. Appropriate action are then taken by police and local authorities in warning/alleviation measures in the specifically designated areas.
- 3.10 North West Region also operate schemes for areas outside the formal flood warning zones and for British Rail. In the former case, area district officers are responsible for issuing, where this is possible, warnings through local police, for flooding from generally minor watercourses where no formal flood warning arrangements are in operation. In the latter case, a procedure exists to try and assist British Rail reduce the risk of accidents due to flood damage on bridges. Once river levels reach the threshold where public warnings may be required, telex messages, similar to those sent to county police, are sent to British Rail at Crewe for every flood risk zone which is experiencing high levels. Operation 'Noah' is in addition to procedures already in place with British Rail under operation 'Neptune'.

- 3.11 As no formal Pollution Control or Fisheries procedures currently exist in North West Region, details of the response to pollution or fisheries related incidents are examined under Section 2. Personnel Arrangements.
- 3.12 Reporting procedures vary from department to department. No multi-disciplinary daily reporting system (such as is operated by Wessex or Anglian Regions) exists in North West Region. The Emergencies Officer is examining the possibility of using a region-wide IT network to promote a wider dissemination of incident reports.
- 3.13 The flood warning and defence department run the most comprehensive reporting procedures. Both verbal and hard copy warnings are sent to police under arrangements formalised in the Flood Warning and Defence Manuals. In addition, hourly updates and a final update are provided to the relevant authorities via the police. In the event of an operational flood defence response, reports based on the incident report form, are faxed to the administration officer at the flood incident room. The distribution includes the Flood Defence Regional Manager, Technical Manager, PR Officer and Regional General Manager if required. A full report is compiled after the closure of the incident and the Emergencies Officer is responsible for liaison with National Office under the national 'Emergency Liaison Arrangements'.
- 3.14 Pollution Control staff, in comparison with other NRA Regions, run a lackadaisical reporting system. Details of the reported incident are recorded on a two part form, a top copy is sent to the Pollution Control Officer who investigates the incident and the bottom copy is retained at the administration office. The Pollution Control Officer reports the results of his investigation on the bottom half of the top copy and returns it by post. It was noted that reports are typically returned within a week but may take as long as a month. The returned copy is joined with the original and the results are logged in an electronic database. In the event of a major incident, both the area and EQ Managers would receive a verbal report and update. In addition, a hard copy report would be faxed to the Regional Headquarters. It should be noted that as formal

procedures do not exist, the reported procedures rely on the individual response rather than on region-wide standards.

3.15 Two principal reasons were cited for these informal arrangements: Pollution Control staff work from home; and secondly, trust is placed in the experience of the field staff to carry out the correct procedures and to ensure that relevant posts and departments are informed. Whilst not adversely criticising the latter, it was commented that procedures exist to assist the individual and to ensure that individual performances are 'corrected' against a common standard. In emergencies, clearly, procedures contribute to an efficient and quick response.

3.16 Fisheries staff run an internal reporting system including on the spot debriefs following major operations. Unlike other Regions which use logging in and out procedures for Fisheries staff working particularly at night, and specifically in anti-poaching operations, North West assess such procedures as unnecessary given that staff involved in an operation would regroup anyway for a debrief. Furthermore, all the field force have cellphones and PMR so that instances of 'missing staff' are very rare.

3.17 Lastly, in addition to internal procedures, the Emergencies Officer maintains a library of emergency procedures relating to external agencies. These include CIMAH sites, county council plans, police plans relating to operations 'Neptune' and 'Albion', and oil spill clean up plans at county level.

4. EMERGENCY CONTROL FACILITIES

4.1 North West Region currently do not run a regional communications centre. Substitute arrangements are examined in Section 2. Personnel Arrangements.

4.2 Area incident rooms may be opened both for pollution and flooding incidents. The former are rarely used, flooding incident rooms are more commonly established in conjunction with the area flood warning rooms.

- 4.3 Flood warning, however, remains a regional function and a regional flood warning room is maintained at the Headquarters in Warrington. The facilities available in the Regional flood warning room are both sophisticated and comparable with any of the better equipped NRA Regions.
- 4.4 Meteorological conditions are monitored using a variety of systems as well as through forecast arrangements and daily meetings with the Stockport Meteorological Officer. Weather radar provides both the local and national picture. 'Jasmin' displays the radar rainfall picture obtained from the local Hameldon radar. This picture is updated every fifteen minutes and data is stored for the proceeding two and a quarter hours. Past data can be displayed using an auto replay control. 'Pluto' displays a combined 'raw' network picture obtained from all the UK radar installations and provides an indication of the general weather situation. The flood warning room also has a satellite weather display which is updated at half-hourly intervals. Lastly, a television set is used to access weather forecasts, UK and world weather statistics, the weather for Granada Region, the weather map and outlook, the marine forecast and European weather.
- 4.5 Detailed forecasts are received daily both from the National Meteorological Office and the Stockport Meteorological Office. Bracknell transmits daily tidal surge forecasts and wind speed and direction forecasts by facsimile every morning during the 'Neptune' season (September to April inclusive). Out of season updates may be obtained by telephone. Heavy rain and gale warnings are issued by the Stockport Meteorological Office both verbally and by telex. These warnings are in addition to rainfall and wind information received at daily meetings with the Stockport Office.
- 4.6 Telemetry systems monitor 50 river, 20 rain and 4 tidal gauges region-wide outstations which are radio controlled. The outstations are polled automatically every 15 minutes and alarm both at the regional flood control room and at the Plc control room. Flood warning alarms can be either discretionary or mandatory. In the former case, alarms are set at standby levels/flows (either predicted or

achieved) and standby rainfall intensities. Mandatory levels are set at levels which correspond with the need to take specific actions but will be discontinued as redundant. Alarms are initially received at the regional flood room and are logged on the printer and displayed on an alarms list. If the alarm is not acknowledged within 15 minutes, the alarm will inform the NRA Regional Duty Officer. Close cooperation between the Plc controllers and NRA Duty Officers ensures that alarm logging is not duplicated.

- 4.7 Outstations may subsequently be monitored either singly, as groups, or as a complete poll. The associated visual display units enable data to be displayed in the form of reports, graphs, diagrams, manual readings and alarm lists. Printers allow this data to be printed - flood alarms and a daily poll are automatically printed. A separate graph plotter enables a hard copy of any graphs displayed on the screen to be plotted. Monitoring would normally be undertaken from the flood room but the provision of lap top computers will allow Duty Officers to monitor alarms from home.
- 4.8 The flood room also holds a library of emergency related documents. These include county, police and MAFF emergency plans and procedures, as well as NRA flood warning and defence manuals.
- 4.9 The versatility and sophistication of the North West telemetry allows forecasts to be based on rainfall levels, rainfall run-off, modelling and integrated weather data. Area flood rooms maintain similar facilities but are used to monitor conditions and not to issue warnings.
- 4.10 In deciding on how to process raw river and rainfall data to provide flood forecasts, a choice had to be made between the simpler, automatic models and more sophisticated models which give longer lead times. The simple, automatic models were chosen as best suited to the Region, run continuously, and generate alarms based on forecast run-off. The forecasts can then be improved by real-time correction and at present this is being carried out subsequently by manual means although it is planned, in future, that this function will be performed

automatically.

5. COMMUNICATIONS

- 5.1 North West Region use a mix of mainly trunked and some untrunked PMR, as well as vodaphone and cellnet. PMR is mainly used by Flood Defence staff, Cellnet and Vodaphone are more widely used by Pollution and Fisheries staff.
- 5.2 The trunked PMR is shared with North West Water Plc and offers the following facilities: vehicle to vehicle communications, vehicle to area and regional switchboards, vehicle to North West Water and NRA extensions on private lines, and vehicle to STD lines in emergency situations. The chief disadvantages of PMR are that it remains principally a vehicle mounted system and except in emergency cases, cannot be used to assess the BT network. It is also restricted by a 2¹/₂ minute link and by a 3-telephone link limitation.
- 5.3 As a result, both Pollution and Fisheries staff, whose daily business commonly demands communications with external agencies, make greater use of vodaphone and cellnet. Two disadvantages of cellular telephones were cited: the lines, unlike PMR, are not private; and more significantly, cells in the North West can be as much as 40 km apart (this compares with a quoted average of 2 km in the Greater London area). In event of major incidents, the system can become overloaded as both the emergency services and the media compete for the same cells. North West Region also has associated blackspot problems in the mountainous areas of Cumbria.
- 5.4 In addition to the principal systems described, Fisheries staff make use of non-trunked PMR in anti-poaching patrols. The use of a vehicle as a controlling station is frequently used to overcome blackspots.
- 5.5 Overall North West Region can ensure that key staff can be contacted by PMR, cellular telephone or by pager, in reasonable time.

5.6 Future plans to improve the communications network include private wire telephone with 'intelligent' switches, which has recently been installed and enhanced PMR.

6. EQUIPMENT

6.1 North West Region maintain 20 locations with equipment and plant stocks. These range from depots to boat houses. The five principal depots are located at Bridgend, Garstang, Winkford, Bedford and Great Hanging Bridge. The geographical siting of these depots, a historical inheritance, allows ready access to equipment region-wide.

6.2 It has reported that, nevertheless, extensive use is made of local contract labour and plant as well as of North West water resources.

6.3 Equipment schedules are maintained at area level but no regional schedule is kept - this reflects the absence of a regional emergency procedures manual which is currently being drafted.

6.4 Other than a shortage of booms, North West Region did not report any outstanding equipment deficits which might affect emergency operations. The reported boom shortage raised the issue of NRA/MPCU/local authority areas of responsibility in the event of offshore and inshore pollution incidents. The current ambiguities that exist in such cases was one of the most commonly voiced complaints recorded in the course of this review.

7. EXERCISES

7.1 North West Region do not run regular exercises but plans are being prepared by the Emergencies Officer for an exercise with local authorities in the future.

7.2 In April, the Region took part in 'Exercise Half Moon'. The exercise simulated a 3,000 gallon release of fuel oil in Morecambe Bay and was jointly run by the Fire Brigade and MPCU. Other participants included the coastguard, county and district councils and MAFF. The NRA role included real-time and paper participation.

7.3 The Region do not run an Emergency Planning Group but seminars, both external and internal, are held on a regular basis. In addition, regular meetings are held with the emergency services and local authorities, primarily to discuss flood related matters.

8. FINANCE

8.1 North West Region did not report any financial constraints which might affect emergency operations.

8.2 Excess or unforeseen expenditures are covered using an authorisation code which is issued by the Finance Department.

8.3 It should be pointed out, however, that the current pay review affecting Pollution Control staff does, in effect, acts as a financial constraint which might result in embarrassment to North West Region, if an emergency occurs out of office hours and the NRA response is seen to be slow.

9. CONCLUSION

9.1 North West Region, in comparison with some other NRA Regions, is run in an 'ad hoc' fashion with the exception of the Flood Warning and Defence department which has both relatively sophisticated technology and a system of duty personnel. Arrangements in other departments - specifically Pollution Control - remain informal, and potentially might result in embarrassment to the NRA. The lack

of a regional communications centre and the reliance on administrative staff or BT telephonists is also seen as an unsatisfactory solution to providing 24 hour emergency coverage.

9.2 North West's problem is not an unwillingness to change existing practices but an apparent lack of funding to do so. Decisions are invariably cost driven with the result that the Region is forced to adopt second best solutions - the plan to employ two part time employees and contract security staff to man the yet to be established regional communications centre is a case in point.

9.3 In fairness, North West to date have a good record and are concerned with the areas of apparent weakness in their procedures. In the long term solutions are being sought which will both balance budgets and provide a professional service.

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WELSH REGION

1. INTRODUCTION

1.1 Welsh is one of the largest regions in the NRA comprising an area of 21,300 sq km and with a population of 3.1 million. The Region is characterised by its unique ethnic culture and language, an upland landscape, three national parks, over 50 fast flowing river, and over 1,700 lakes. With an average rainfall of up to 4,000 mm in Snowdonia and over 2,000 mm over parts of mid and south Wales, flooding remains a significant problem.

1.2 The Region is divided into three divisions with the Headquarters at St Mellons, Cardiff. South-East division is divided into two areas based at St Mellons and at Monmouth. South-West division is divided into three areas with offices at Haverford West, Swansea and Lampeter. Northern division comprises two areas based at Caernarvon and Mold. These areas relate to the Environmental Quality and Fisheries functions, and within the areas, responsibilities have been 'patched' on the basis of demand or workload.

Anomalous boundaries between these functions do exist, but do not result in integration problems, as offices are shared and both departments cooperate closely.

1.3 Flood warning and defence boundaries are different again with six areas reporting to their respective Flood Committees. These are: Gwynedd, Elury, Dee, South West Wales, Usk and Wye, and Glamorgan and Gwent Valleys.

1.4 In each division there is a Divisional Scientist (EQ) and a Senior Flood Defence Officer. The former has working for him a Pollution Control Manager; a Fisheries, Conservation and Recreation Officer; and an Environmental Quality Services Officer. The latter controls both the flood warning and defence functions.

- 1.5 The Region's key statistics include 5,679 km of main rivers, 411 km of estuaries, 1,100 km of coastland, and over 72 sq km of inland lakes and reservoirs.
- 1.6 Potential sources of pollution are varied. In the North-West, hill grazing and afforestation can lead to acidification. In the more fertile agricultural areas of Pembrokeshire and Herefordshire, strong farm effluents and diffuse inputs of nutrients and pesticides are the principal concern. Industrial effluents are a major problem in the industrial areas of South Wales. In the last year there were 2,746 pollution incidents, of which the majority were agriculture or sewage related.
- 1.7 The principal concern to the Fisheries Department, other than pollution incidents, is poaching. The Wye is the principal salmon river of England and Wales and the only one designated as an SSSI for its whole length. There were 76 reported pollution incidents resulting in fish kills in the last year, and 356 poaching incidents, reflecting the significance of this problem in the Region.
- 1.8 With the high rainfall, flooding remains a significant threat and extensive areas of the Region, including major centres of population and industry are at risk of being flooded from the sea, rivers and other watercourses. The majority of the population live in the south on the lower reaches of major river catchments, whilst in the north, there is a concentration of industry near the middle and upper reaches of the River Dee. In the last year, the majority of flood warnings were fluvial based.

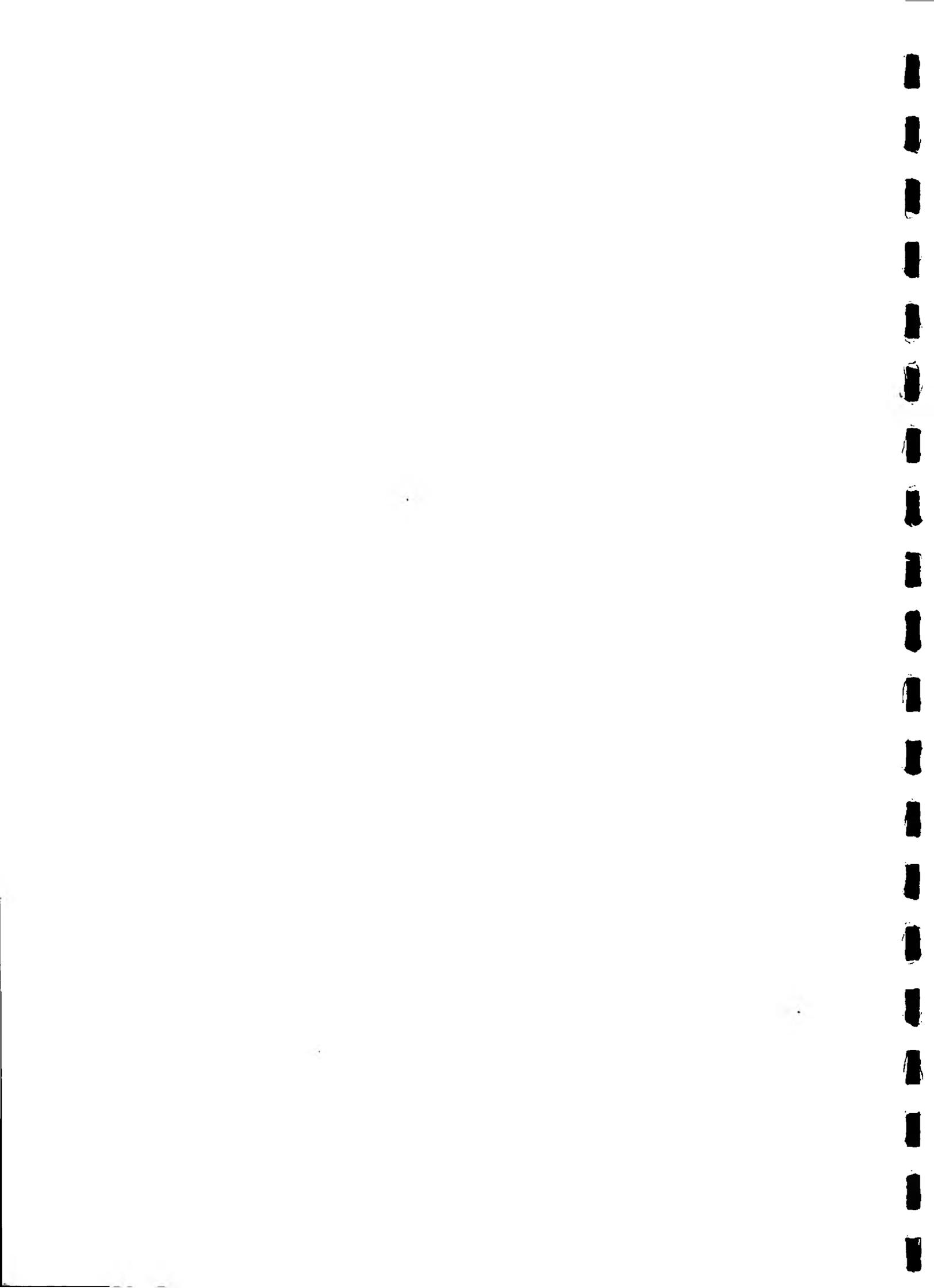
2. PERSONNEL ARRANGEMENTS

- 2.1 Welsh Region currently have no Emergencies Officer but hope to recruit one in the near future. The emergencies function is currently fulfilled by the Regional Environmental Quality Services Officer who is responsible for the pollution control emergency procedures and for the maintenance of the relevant manuals. He has no overall emergency responsibilities and does not manage the reception or security staff (there is no Regional Communications Centre). In comparison

with other Regional Emergency Officers, his responsibilities are limited and, as a consequence, he remains 'a lame duck' Emergencies Officer (this is not a personal criticism). Indeed, even his membership of the emergency procedures review group was ended, but it is hoped that he will be reintroduced in the near future. That Welsh Region operate successfully without an Emergencies Officer reflects the degree of decentralisation in the Region - the divisions are essentially autonomous and there is no perceived need for a regional level emergencies team. Secondly, it reflects the absence of a regional radio network. The Region are customers to the Welsh Water Plc communications network and operate to the private company's control rooms. With no integral communications and no operational role for the regional headquarters, the appointment of an Emergencies Officer has not been a priority.

2.2 Nonetheless the Region has decided to appoint an Emergencies Officer, a decision driven by the need to replace night contract security men with NRA employed controllers. Currently, with no communications centre, 24 hour regional cover is provided by the reception area which includes the telephone exchange and a telemetry monitoring area. During office hours the reception is manned by two telephonists whose principal role is to receive visitors and operate the telephone exchange. They also have a secondary role of monitoring the alarm systems on the telemetry. It is suggested that during busy periods both systems might not be operated as efficiently as might be, if there was a dedicated communications room with controllers.

2.3 The principal drawbacks of the system, however, are most evident during the night shift. A single contract security man is on duty representing NRA Welsh Region, an arrangement which was conceded to be unsatisfactory. The contract staff were described as 'of variable quality', there were reported instances of slow responses, and none of the present staff are Welsh speakers. This latter point has implications with place names and although a gazetteer and maps are provided, there have been reported instances of staff being sent to the wrong locations. None of these points present the NRA as a professional efficient service.



- 2.4 The issue of Welsh speaking staff is significant. A proportion of callers initially talk in Welsh and expect to be answered in their native tongue. Welsh place names, as already indicated, can be confusing to a non-Welsh speaker. The NRA is committed to supporting a Welsh language policy and this should be reflected with appropriate staff. Welsh Region are examining the feasibility of replacing existing contract staff with Welsh speaking NRA staff.
- 2.5 Operational matters are managed at divisional and area level using a balance of duty and on call personnel.
- 2.6 Pollution staff operate an area Standby Officer who is on duty for a week at a time, 24 hours a day. During office hours he would be contacted by the telephonist at the divisional exchange who would in almost all cases receive the initial call from the public. During out of office hours, he would be contacted by the security man at the Regional Headquarters. The Standby Officer is responsible for ensuring that the incident is investigated, either by visiting the incident site himself (more common during out of office hours) or by delegating the incident to the relevant Pollution Officer with experience of the patch. The officer in the field then becomes the Investigating Officer and reports to the Standby Officer who in turn reports to the Senior Pollution Officer, Pollution Control Manager, or Divisional Scientist. The Area Standby Officers may support each other. Pollution procedures area examined fully in Section 3. Procedures.
- 2.7 Fisheries staff do not operate a formal duty system. Each area is managed by a Head Bailiff who runs a team of up to ten bailiffs depending on the area. The Head Bailiffs report to a divisional Fisheries, Conservation and Recreation Officer. During office hours public calls are directed to the Head Bailiff who is responsible for delegating the incident to the relevant bailiff. More commonly, notification of an incident will be received via the Area Standby Officer. During out of work hours, the St Mellons exchange will attempt to contact the relevant bailiff. If he cannot be contacted, an adjacent bailiff will be contacted. The Head Bailiff may also be contacted in extreme circumstances. It should be noted that the majority of out of office hours fisheries incidents are reports of poaching.

- 2.8 Flood warning staff use a system of one Duty Officer per area for a week at a time, for 24 hours a day. The Duty Officer may be a trained hydrologist or engineering staff (the telemetry is sufficiently uncomplicated to allow non-specialist staff to monitor the systems competently). The Duty Officer is provided with a lap top PC and may monitor the telemetry from home. More commonly, Duty Officers will monitor the systems from the area flood warning rooms when meteorological conditions suggest the possibility of flooding. In the event of a flood warning issue, an incident room is opened at area level, managed by an Incident Controller. A red flood warning would entail the call out of back up staff to man the Incident Room, the call out of flood defence supervisors and manuals if necessary, and notification to the Regional Flood Manager, PR Office and certain external agencies. Flood warning procedures are examined in detail in the next section, Section 3. Procedures.

3. PROCEDURES

- 3.1 Welsh Region maintain a basic set of emergency manuals to cover the pollution and flood warning functions. There are no general regional emergency procedures (no emergency role is perceived for the Regional Headquarters), no Flood Defence manuals. The absence of Flood Defence manuals was not satisfactorily explained (the staff 'know what to do' is not an adequate explanation for this omission, nor are the characteristics of some of the rivers which flood quickly, reason to entirely omit any written flood defence procedures). Indeed, Welsh is the only NRA Region without Flood Defence manuals.
- 3.2 Pollution manuals are division based and are updated by the Environmental Quality Services Officer. The manuals are additionally reviewed by the Emergency Planning Review Group. All three manuals follow a similar format with details of inward reporting, internal communications, incident management, external communications, and an external contacts list. The latter includes police, road/rail hazchem, the fire services, county councils, district and borough councils, health authorities, agricultural interests and the Welsh Office. Each Pollution

Officer has a personal contacts list which includes a wide ranging number of agencies which are usually maintained at libraries in other regions' communications centres. This reflects the degree of decentralisation enjoyed by divisions in Welsh Region.

3.3 Flood warning procedures are contained in one general flood warning manual, and six area flood warning manuals. The general manual is used by regional level managers, the telephonists and security guards, and contains four basic sections: a general outline of procedures, contact lists, rotas, and the categorisation of flood warnings. The area manuals contain details of likely flood threat areas and contact lists in tabular form. The breakdown includes: the area at risk using a simple number code; the required warning; which police force the warning is issued to; whom the police must inform; and which areas are likely to be affected. The police find the number code system particularly useful and use it to initiate pre-determined procedures. Flood Defence manuals are updated at area level, with the exception of the general flood warning manual which is amended by regional staff.

3.4 The Emergency Procedures Review Group (unlike its Thames Region counterpart) only covers pollution related incidents and has the following terms of reference: 'The Group should periodically thoroughly review all category 1 alarms and some category 2 and 3 incidents, consider actions taken and their adequacy, and to recommend improvements where necessary. For some major incidents a review may be undertaken immediately after the event, particularly where procedural problems are evident. The group are also required to review and amend where necessary the communications and reporting procedures and to ensure that simulated incidents are carried out at regular intervals. It is recommended that this group should be extended to include all emergency related functions, the PR Office, and be chaired by the future Emergencies Officer.

3.5 Pollution procedures are established in the divisional manuals and follow an identical format. Reports of pollution are generally received from the public but may also originate from the fire service, police forces, agricultural interests,

angling clubs and through routine monitoring. During office hours, the call would be received at the area offices by the Area Standby Officer. During out of office hours, the call is received by the security guard at St Mellons who is responsible for contacting the relevant Area Standby Officer. In both cases, the calls are local charge rather than freephone, and the details are noted on a PIC 1 form. This form becomes the basis of future reporting on that incident and is faxed to the relevant area offices. The 'Polfax' form is used for situation updates. the Duty Officer may be contacted by radio, vodaphone or pager. If he is unavailable due to other commitments, a cascade system of alternative officers is used. In extreme circumstances, the Senior Pollution Control Officers may be notified. During out of office hours, the adjacent Area Standby Officer may also be notified as an alternative.

- 3.6 The Investigating Officer is responsible for assessing the information and for categorising the incident. In the case of category 3 incidents, an investigation is organised as soon as practicable to assess the situation and remedial action is taken. In the case of category 1 and 2 incidents or where media attention is expected the Investigating Officer and Head Bailiff are informed (if there are reported or potential fish mortalities); and a Polfax is sent to the EQ Manager and PR Office at Regional Headquarters. The Investigating Officer may also contact potable abstractors using the Polfax form, contact industrial abstractors, organise the contact with downstream users and liaise with emergency services. However, these steps would more commonly be taken by the Senior Pollution Control Officer, allowing the Investigating Officer to conduct the field investigation without the additional burden of external liaison. In the event of category 1 incidents only, an incident room would be opened at area level this would be managed either by the Divisional Scientist, Pollution Control Manager, or Senior Pollution Control Officer with support from additional pollution staff not involved in the investigation. The regional Toxicity Scientist, Environmental Appliances Scientist and Survey Officer may also be contacted if relevant. Standby telephonists from the administrative department may also be used if there is excessive public attention. Polfax updates would be sent to the EQ Manager at regional level in the usual way. The Incident Room would also be responsible

for all external liaison. Possible information addresses might include potable abstractors, the emergency services, industrial abstractors, local authorities, MAFF and environmental organisations.

- 3.7 The EQ Manager remains the point of contact at regional level throughout the duration of the incident. The EQ Manager is responsible for informing the Regional Manager and the NRA National Office. He may also liaise with the Regional PR Office.
- 3.8 When this incident is closed, the Incident Room is also formally closed and all relevant parties are informed. The subsequent pollution report is stored electronically on a pollution incident database which is accessible across divisions. The current PIC 1a and PIC 1b reporting formats were described as not user-friendly and it is intended that they will be substituted with new formats in the near future. In addition, Welsh Region hope to develop the computerised electronic office system (CEO) currently in place, based on 'Multisync II' hardware, to automatically mail reports. This system would be similar to that used by Wessex Region, based on 'VAX' hardware.
- 3.9 Flood warning procedures are similarly proceduralised and are based on a system of Area Duty Flood Warning Officers. During out of office hours all regional alarms are monitored by the contract security man at St Mellons who is responsible for alerting the relevant Area Duty Officer who may either monitor the situation from home using a lap top PC, or more commonly, who would return to the divisional or area offices to monitor the situation from the area Incident Rooms. In the majority of cases, long range weather forecasts would have warned the Duty Officers of the likelihood of flooding and the Incident Room would be monitored in any case.
- 3.10 As soon as the Incident Room is formally opened (effectively when a flood warning is issued), the Regional Flood Manager or subordinate would be informed. In the case of red warnings, he would report to St Mellons and monitor the situation from the telemetry room in the reception area. Other measures

taken at this stage would include: informing the PR Office, calling out additional staff to act as telephonists and spare flood warning officers, informing Flood Defence supervisors and manuals, and informing Welsh Office and the NRA National Office. The flood warnings are issued to the relevant police forces who are responsible for warning threatened households with assistance from local authorities and flood wardens. It is hoped to extend the flood warden system throughout the Region as assessments suggest that flood warning dissemination at ground level is generally not satisfactory. A voicebank service is available in some areas and it is hoped that this measure will also be extended throughout the Region.

- 3.11 Fisheries staff do not operate a formal duty system but all staff are effectively on standby. The normal route for reporting incidents is via the area Fisheries Officer, through the Head Bailiff to the relevant area bailiff. However, given the nature of fisheries tasks, any combination of this reporting chain can be used. It must be stressed that the principal 'emergency' task for Fisheries staff in Welsh Region is anti-poaching patrols and further that the work entails physical risks. During daylight hours bailiffs may operate alone, but at night they must operate as a minimum in pairs. In fact, all sixty regional bailiffs may be operating at the same time once the poaching season is under way.
- 3.12 The anti-poaching role has resulted in logging in and out problems which have yet to be satisfactorily resolved. Briefly, the radio network cannot be relied upon and is run by Plc controllers anyway, who have no contractual obligation to pass telephone messages or to maintain logs on NRA staff; the dissemination of cellphones is not sufficiently widespread to allow each Fisheries Officer to personally log in and out; and lastly, the receptionist or night security man would be unable to cope with sixty Fisheries Officers all trying to log on and off at roughly the same times, as well as carrying out other duties. The current system relies on officers informing their wives or the Head Bailiff of their whereabouts and is assessed as inadequate. It was suggested that a Duty Fisheries Officer may act as a central point for reporting as well as for logging in and out. Currently, the Fisheries Department are waiting for the appointment of an Emergency

Officer and staff before considering amending existing procedures. A separate check in log exists for pollution staff but it is felt that the added burden of sixty Fisheries bailiffs would make the system unworkable.

4. **EMERGENCY CONTROL FACILITIES**

- 4.1 Welsh Region have no communications centre. This role is fulfilled by the telephone exchange which is equipped with telemetry monitoring and other systems. In addition, there are six area flood warning rooms. Pollution Control staff may use designated incident rooms in the event of a category 1 incident.
- 4.2 The reception area is equipped with telephone exchange facilities as well as telemetry systems in a small side room. During out of office hours all regional telemetry alarms are monitored on three VDUs in the St Mellons telemetry room (two VDUs are reserved for South East Division, and Central and Northern Divisions share one VDU). The room is also equipped with facsimile, telex (to receive Operation Neptune messages, specific to north coast floods), and with a PC which incorporates the computerised electronic offices facility. Maps, gazetteers, telephone books and emergency manuals are also held in this room. The problems associated with using the reception area as 24 hour control room are examined under section 2. Personnel Arrangements.
- 4.3 Each of the six area flood warning rooms are equipped with similar facilities. Both national and local radar coverage is available for most of the Region and is displayed in the usual way, using pictograph real-time rainfall intensities superimposed over a map of the United Kingdom. This facility is considered invaluable in Welsh Region where flooding can be rapid and can only be safely forecast by analysing the movement and saturation of rainfall fronts. In addition, extreme weather warnings and heavy rainfall warnings are received from the Thames Barrier and National Meteorological Offices respectively.
- 4.4 The telemetry currently employed was developed by Welsh Region and is driven

by local conditions with a stated aim to produce a cheap, simple and flexible system. These conditions include rivers which vary in their characteristics from area to area allowing flow forecasting only in the slower rivers such as the Wye. Region-wide there are over 200 gauges which monitor rain and river levels. Central division use DTs 1150 outstations which work on PSTN. These are described as very reliable and have a capacity for 32 days data storage. South West and Northern divisions use Dynamic outstations.

4.5 To achieve both flexibility and simplicity no master station is used and effectively any remote user can interrogate the telemetry by plugging into a telephone socket. The system, known as 'Flood-Buster', allows for interrogation at a given start time, individual, group, or automatic interrogation. In any given pool the outstation will provide information based on the last 24 hours and has the facility of producing a chart which includes the last recorded value, warning level thresholds and rainfall levels. The latter are significant as the basis for forecasting in the Region, given the characteristics of the rivers and the heavy rainfall levels, is precisely, predicted rainfall levels. Automatic alarms allow the system to remain 'dormant' during quiet periods, a useful cost saving measure.

4.6 Flood warning rooms are also equipped with facsimile and numerous spare telephone lines.

4.7 Overall, Welsh Region have decided to adopt the 'low budget' approach, decentralising functions and using simple, but reliable technology. This approach has also in part dictated by reliance on a Plc communications network, and by the geography of the Region.

5. COMMUNICATIONS

5.1 Welsh Region do not run an integral radio communications network and are contractually bound to the Welsh Water network. NRA employees therefore report to Plc run control rooms, an arrangement which carries with it several

disadvantages.

- 5.2 The Plc control rooms may receive telephone messages from NRA staff, but are not obliged to relay messages by telephone (the system therefore does not allow for vodaphone-radio integration). Secondly, Plc controllers may not be as helpful to NRA staff in situations where there may be a compromise of Plc interests. This is unproven, and less an allegation, is a reasonable supposition. Thirdly, the network is necessarily shared with another major user, increasing traffic flow problems. Lastly, and most significantly, the system is unreliable. Recent investments in microwave rebroadcast facilities have not fully resolved the problem of deadspots which the Welsh topography incurs.
- 5.3 This latter problem is most marked with Fisheries staff whose disillusionment with the system is such that it has largely been abandoned in situations where there is real risk of physical injury (such as anti-poaching patrols), and where reliability is essential. With only a limited number of cellphones (one is issued to the Head Bailiff and there are two spare phones per area), the lack of reliable, personal communications for Fisheries staff has become an urgent problem. Knowledge of the capabilities of cellphone has increased the Bailiff's disillusionment with the radio network which is perceived as outdated and unreliable technology. Without investment in cellphones for each bailiff and/or a sophisticated military-style short range radio system - it is difficult to see how this problem might be resolved.
- 5.4 Pollution staff are all equipped with cellphones, allowing them a measure of independence from the Plc controllers. Flood Defence staff issue, cellphone or vodaphone to Duty Officers and maintain reserves for field staff.

6. EQUIPMENT

- 6.1 Welsh Region maintain 30 depots throughout the Region of which 'under ten' were described as being of sufficient size to hold stocks of plant and equipment which might be used in an emergency.

6.2 There is no central equipment schedule but it was reported that divisions do hold equipment lists. In comparison, with other regions which integrate equipment schedules with Flood Defence manuals, Welsh Region appear less well prepared in the event of a major emergency. During the Towyn incident, neighbouring NRA Regions loaned equipment. This is not a criticism of Welsh Region but primarily reflects extent of the flooding.

6.3 Local contracts for plant and manual labour were described as uncommon.

6.4 There were no reported equipment deficits which might affect emergency operations.

7. **EXERCISES**

7.1 Welsh Region do not run a regular programme of exercises. In the last 18 months, it was reported that the Region had run two communications exercises and had taken part in a British Pipeline Association exercise.

7.2 In place of exercises, Welsh hold a regular Emergency Procedures Review Group which examines significant incidents and incorporates 'lessons learnt' into current procedures. In addition, 'road-show' seminars are held bi-annually in the divisions during which procedures are explained.

7.3 Divisions also hold seminars and regular meetings with local authorities and with police forces.

8. **FINANCE**

8.1 Welsh Region did not report financial constraints which might affect emergency operations.

8.2 The EQ Department reported a central pollution alleviation fund but there was no reported emergency fund for Flood Defence. During the Towyn incident, it was reported, financial commitments were undertaken which were not satisfactorily resolved.

9. **CONCLUSION**

9.1 Welsh Region is unique within the NRA in several aspects. Geography has dictated an extreme level of decentralisation. No communications centre is run and 24 hour coverage is provided by contract security staff, a system which is acknowledged to be unsatisfactory. The Welsh language adds another dimension to the problem of providing a professional service to the public. Lastly, the Region are entirely reliant on Welsh Water for radio communications, a reliance which has significant implications to Fisheries staff.

9.2 Nonetheless, the Region has found 'low budget' solutions to their problems and has demonstrated, perhaps with a measure of luck, that an efficient service can be provided without recourse to necessarily expensive solutions. Furthermore, the Region have identified their most urgent problems and are actively seeking solutions.

ANGLIAN REGION

1. INTRODUCTION

- 1.1 Anglian is the largest Region in the NRA comprising 14 counties. The Regional Headquarters is at Peterborough and there are three catchment areas: Northern area, based at Lincoln, has three districts with offices at Manby, Spalding and Kettering. Central area is based at Brampton with offices at Kings Lynn, Ely and Bedford. Eastern area is based at Ipswich and also has three districts with offices at Norwich, Kelevdon and Chelmsford. Each area is managed jointly by a Flood Defence and Environmental Quality Manager and this relationship is paralleled at district level with a district Environmental Quality Officer and district Engineer. Boundaries are integral for all three principal functions, flood defence, environmental quality and fisheries, avoiding the problems of anomalous boundaries experienced in Thames Region.
- 1.2 Anglian Region has a total area of some 27,200 sq km but includes a comparatively small population of 5.3 million. There are 5,801 km of main river and 1,271 km of sea defences. The most significant emergencies in the Region are tidal floodings on the long eastern coastline. During the last winter, over one hundred warnings were issued of which about 60% were yellow, 30% amber and 10% were red. Fluvial floods are not as significant a threat with the relative low rainfall levels and chalk aquifers, but unusual weather can reverse the pattern of floodings.
- 1.3 There were 1,850 reported pollution incidents in the last year of which just under 100 were category 1 or 2. Oil and sewage work related incidents are commonly the more significant. Organic farm wastes surprisingly account for less than 200 of the reported incidents. There is fisheries involvement in a small proportion of these incidents (there were 163 reported fisheries incidents in the last year).

2. PERSONNEL ARRANGEMENTS

- 2.1 Anglian have subordinated the emergencies function to flood defence, a common practice in several NRA Regions. This compares with the better line management structure in Severn-Trent Region where the Emergencies Officer and staff are subordinated to the services manager, remaining independent of the functions they serve.
- 2.2 A Senior Planner Emergencies reports to a Regional Coordinator (who in turn reports to the Regional Flood Defence Manager), and has subordinated to him a Communications and Emergencies Officer and five communications room staff. Four relief operators are also available in the case of emergencies. The emergencies function, then, is divided between two officers: the Senior Planner has overall responsibility for emergency procedures, manuals, exercises, and liaison both internal and external (but not security); and the Communications and Emergencies Officer remains responsible for communications and the day to day running of the communications room. In an emergency, the senior officer has supervisory duties and the Emergencies Officer remains responsible for the efficient operation of the communications room. Anglian, like Severn-Trent Region, have divided the responsibility of a Regional Emergencies Officer between two posts and this arrangements appears to allow greater flexibility and a more efficient management of the emergencies function.
- 2.3 The Regional Communications Centre is manned on a 24 hour basis with one of five communications controller working on a rotating shift. This is assessed as an intensive schedule, and during periods of heavy traffic, the normal complement can be supplemented by four relief radio operators. The chief roles of the Regional Communications Centre are to control communications throughout the Region, to inform NRA officers and outside organisations of significant events, and to represent the NRA to the public. During out of office hours the RCC also takes over the function of the telephone exchange. In the event of a major emergency, the RCC would be manned by up to five staff and would be dealing almost exclusively with radio communications. In this event, a Regional Control

Room is established, see Section 3 Procedures.

- 2.4 There is no flood warning room or staff at Regional Headquarters - this function has been decentralised to the areas. Given the geographic area covered by Anglian, this has been assessed as the most practicable solution.
- 2.5 Personnel arrangements within the functional departments are based on four tiers of duty personnel, all on duty for 7 days, 24 hours a day starting at 10.00 hrs on Friday. The tiers are Duty Manager, Regional Duty Officer, Area Duty Officer (both Flood Defence and Pollution Officers) and District Duty Officer (again, both flood and pollution departments are represented). This system is among the most comprehensive of all NRA Regions and is commended. The duties of each of these tiers are simply laid out in the emergency manuals and are regularly amended by the Emergencies Planning Officer following exercises or major incidents. The system also allows a high degree of inter-district, inter-area and cross-departmental cooperation which is also commended. The principles behind this organisation are: decentralisation of decision making (operations are both run and managed at area level and below) while maintaining a continuous passage of information to the regional headquarters and RCC.
- 2.6 Pollution incidents are reported either to the RCC or to area offices directly. During office hours, it is the Area Duty Pollution Officer's responsibility to inform the relevant District Duty Officer who may investigate the incident himself, or task an officer with knowledge of the area ('patching' is encouraged). A Fisheries Officer may also be tasked at this stage. During out of office hours the Area Duty Standby Officer would be informed and he would generally investigate the incident himself. It is unlikely that a Fisheries Officer would be called out during the hours of darkness. If the incident were to escalate, the Area Duty Officer would be responsible for managing the incident. Duties might include external and internal liaison as well as the sending of status reports to the Regional Headquarters. An incident room may be opened as area level but this option is seldom exercised. No emergency has been of such significance that it has required regional procedures to be implemented, but these have been exercised

including the establishment of a Regional Control Room.

- 2.7 Fisheries work closely with pollution staff and there are 11 Fisheries Districts subdivided within 6 Water Quality Districts. Within each District there is a Fisheries, Recreation and Conservation Officer, and two Fisheries Officers. Each Fisheries Officer controls a 'fisheries team' comprising a Senior Fish Assistant, and three assistants. Anglian Region have assessed that anything less than a four man team is impractical for fisheries operations. 'Patching' in fisheries then is not encouraged and partly to compensate for this lack of specialisation Anglian have established a river bailiffs system similar to the river warden system in South West Region. A Senior Enforcement Officer controls an Enforcement Officer, Assistant, and four District Enforcement officers. Part-time fisheries bailiffs and honorary assistants (in the main, volunteers from angling clubs) operate under the guidance of the enforcement officer. These staff are the 'eyes and ears' on the ground and will in the near future undergo a training programme to enable them to fulfil multi-functional roles. There is currently no emergency role for Enforcement Officers.
- 2.8 Flood warning and defence is similarly managed at area level. On receiving notification of an alarm from the RCC, the Area Duty Flood Warning Officer would initiate the polling of outstations. If a red flood warning is required, the Area Duty Officer would be responsible for opening the Area Control Room (which is managed by the Area Control Room Manager) and for informing the following: the District Duty Officer and District Engineer, backup officers, the Catchment Engineer/Operations Manager and indirectly through the RCC, the PR office, Regional Duty Officer, Regional Manager (Flood Defence and Operations) and Regional General Manager. Flood defence operations would be conducted at district level using NRA supervisors and gangmen under overall control of the Catchment Engineer/Operations Manager.
- 2.9 In all three functions, then, full use is made of the comprehensive four tier duty system. Further, reporting chains are clear and line responsibilities operate on the criteria of an escalating scale of significance of the incident.

3. **PROCEDURES**

- 3.1 Anglian Region maintain comprehensive emergency manuals, both general and specialised and these have been rationalised, are 'user-friendly' and detailed. All manuals follow a similar arrangements; a clear index, a first section giving line responsibilities in hierarchical order, detailed advised actions, and appendices. Lastly, the manuals are colour coded for ease of reference.
- 3.2 These manuals include one Regional Emergencies Manual, three Area Flood Warning Manuals; three Area Pollution Manuals; and eleven District Flood Defence Manuals. There is, in addition, an Equipment Schedules Manual. The manuals are updated by the specialist functions under the general supervision of the Emergencies Planning Officer.
- 3.3 Reports of pollution incidents are received either at the RCC or at area/district level and are logged manually. The details are then passed verbally by telephone, supported by a faxed message to the Area Duty Officer, who is responsible for delegating the incident to the relevant District Quality Officer. During out of office hours, the message is passed to an Area Standby Officer who may deal with the incident himself or delegate to a District Officer. In the case of Category 1/2 incidents, the procedures allow for a chain of reporting which ensures that all relevant posts are informed of the progress and conclusion of the incident. An incident room at area level may be opened by the Area Duty Officer, but this option is rarely exercised. Category 1/2 incidents are reported as status reports by 17.00 hrs daily, and are disseminated by facsimile to the RCC and Environmental Manager. These reports are collated overnight to form the daily report which is further disseminated to the Regional Manager (environment and fisheries), the Regional General Manager, the Regional Duty Officer, and the PR Officer. If the incident is of sufficient significance, the PR Officer, Regional Duty Officer and Environmental Manager would be informed immediately, the Regional Manager (environment and fisheries) would also be informed as soon as possible and at his discretion, the Regional General Manager might be

informed.

- 3.4 Flooding incidents are similarly covered by a comprehensive set of reporting procedures. These are sub-divided under the national yellow/amber/red categories. In the case of yellow/amber warnings, both the Area Duty Officer (flood warning) and District Duty Officer (operations) are immediately informed by facsimile. Status reports are subsequently disseminated to the Regional General Manager, Regional Manager (flood defence and operations), the Regional Duty Officer, and PR Officer each working morning using the daily summary report. The Catchment Engineer/Operations Manager and District Engineers are also informed and relevant operational procedures are initiated in the case of a red flood warnings, the list of addresses remains essentially unchanged but the level of reporting is raised. The Regional Duty Officer, Catchment Engineer/Operations Manager, District Duty Officer, and District Engineer are informed immediately. Subsequently, status reports are sent twice daily at 10.00 and 16.00 hrs to the RCC and to the Regional Manager (flood defence and operations), the Regional General Manager, the Regional Duty Officer and PR Office. The Regional General Manager may authorise the release of reports to the national headquarters under the national liaison arrangements. Red flood warnings automatically initiate the opening of operational incident rooms at area level.
- 3.5 Fisheries emergency guidelines are covered by the pollution incidents and the reporting chain is shared with the latter department.
- 3.6 Overall, the system allows for a balance between the decentralisation of decision making to area level, while keeping the relevant regional level officers informed of the Region's daily business. The 'all-informed' aspect of these arrangements encourages corporate identity, inter-departmental cooperation and positive public relations. Indeed, the comprehensive nature of emergency and reporting procedures is such that the Region is able to offer an efficient, professional service despite inadequate communications and an outdated telemetry system.

4. EMERGENCY CONTROL FACILITIES

- 4.1 Anglian run a Regional Communications Centre or RCC to provide 24 hour coverage for the region.
- 4.2 Radio communications are examined in Section 5 Communications. Briefly, Anglian Region inherited a radio system which has proved inadequate and measures to improve the current system and to acquire a new system are being pursued.
- 4.3 The telemetry system, with some 350 outstations is similarly outdated. The system was inherited from the previous water authorities and suffers from the same amalgamation problems which are evident in the communications system. Based on radio rather than on PSTN, the system has experienced frequency problems, transmission difficulties and crashes. The system was described as 'manageable' but 'not good' and vulnerable in the event of a major emergency. Duty officers and systems engineers are available in the event of a major failure. The system monitors gauges giving threshold levels and river flows. If the thresholds are exceeded alarms are activated at the RCC terminal, but not at area level. Controllers must alert Duty Officers who are responsible for monitoring the system and issuing flood warnings, if relevant. Unlike the advanced 'Streamline' system employment by Severn Trent, there is no integrated weather radar, no integrated telemetry data, no rapid polling facilities, no automatic forecast generation, and no flow forecasting - indeed, overall, the system is badly outdated and unreliable.
- 4.4 Taken together then, communications and telemetry are the two most significant areas which need improvement in the near term. These problems are acknowledged by Anglian Region, and will not be examined further.
- 4.5 Meteorological conditions are monitored on a single VDU, using the Bracknell National Weather Service. There is a reply facility but no regional weather picture. Storm tide warnings are provided by the East Coast Storm Tide Warning

Service, and are received by telex. Warnings are disseminated to the relevant areas by facsimile. The facsimile is also used to receive heavy rainfall warnings, severe warnings, and additional weather forecasts.

- 4.6 A separate VDU is used for the display of two principal databases: contact lists and a parish database. A chemical database is also maintained.
- 4.7 Telephone systems are comparatively simple. There is no freephone number for public calls, and a local charge number is used in its stead. There are also two ex-directory lines, one is reserved for employees and one for the emergency services.
- 4.8 The RCC also maintains an extensive library of manuals and other useful documents. These include county emergency plans (district plans are more usefully kept at area level), a complete set of emergency manuals, a controller's instructions manual, as well as gazetteers, maps and telephone books. These documents, or similar, or common to most regional control rooms.
- 4.9 An innovation unique to Anglian Region, however, is worth noting. Category 1/2 flooding incidents, and other significant incidents, are reported as 'status reports', daily to the RCC by facsimile (in the case of amber flooding incidents, the status reports are received twice daily at 10.00 and 16.00 hrs). The reports are collated by the night shift RCC controller who produces a daily report or summary of the previous day's principal events. This reporting system is examined more fully in Section 3. Procedures. The advantages of this simple reporting system is that both RCC staff and relevant regional staff are continuously updated on the Region's daily business.

5. COMMUNICATIONS

- 5.1 Anglian Region acknowledge running an inadequate communications system. The problem is largely historical: the system was inherited from the previous five water

authorities, each of which enjoyed a dedicated channel. With the geographical amalgamation of these areas, and their subsequent division into three new areas, the system was found to be inadequate. Reception difficulties, delays, and clogged traffic were cited as common problems.

5.2 Improvements have been made to the system, but it is currently intended to replace the system with trunkline radio. The current system includes a VDU display and audible alarm giving channel and call sign. The system also has a talk-through facility. Whilst a channel is in talk-through it is not available for other mobiles to use, however, the system displays received calls in chronological order and they can be dealt with when the channel is free. Emergency calls take precedence over all other calls and channels in talk-through may be cleared to enable an emergency call to be handled. The radio system can have all five channels in operation and all on talk-through. In this case all channels cannot be monitored and priority is given to emergency calls.

5.3 As a result of these communications problems, Anglian have invested in a modest programme of cellnet and pagers for those areas with the greater difficulties. The dissemination of cellnet has remained at Area Manager level and is not comparable with the extensive network used in Severn-Trent Region.

Nonetheless, Anglian's communications network will need to be replaced in the near future, and this fact is recognised.

6. EQUIPMENT

6.1 Equipment stocks and plant are maintained at fifteen depots (including the area and district offices) throughout the Region.

6.2 An Emergencies Resources Manual is maintained giving complete equipment lists, locations, and personnel details, both at area and regional level. In addition, equipment schedule, with similar details are maintained in the districts and area

flood defence manuals. Both the Emergencies Resources Manual and Flood Defence Manuals include details of contractors. Given the geographic size of the Region, local contract work is an option which is exercised.

- 6.3 There were no reported outstanding equipment deficits or constraints which might affect emergency operations.
- 6.4 Lastly, Anglian are planning to purchase an 'incident caravan' similar to that in commission with Severn-Trent Region. As this asset is yet to be used in Severn-Trent, it remains difficult to assess its future value.

7. **EXERCISES**

- 7.1 Anglian run regular internal exercises as well as partaking in external exercises. Major flood and pollution exercises are run bi-annually. These exercises, in contrast with other Regions, are reportedly favourably received.
- 7.2 The success of these exercises appears to rest on team planning, limited but clear aims which are appreciated by staff, external participation including umpires from other regions, and thorough debriefs. The 'lessons learnt' are subsequently published in a post exercise report.
- 7.3 Anglian Region also participate in exercises run by the Police, local authorities, and private enterprises. These are assessed as a valuable means for the mutual 'education' of procedures, roles and responsibilities.
- 7.4 Exercises are complemented with regional and area seminars to which outside agencies are invited. In the case of flood defence, these are held before the start of the 'flooding season' and once again, are assessed as a direct way of confirming the roles of the emergencies services, including the NRA.
- 7.5 In addition, irregular and annual meetings are held with local authorities and the

emergency services. Unlike some other regions, this liaison is conducted at area level (rather than, for example, by the emergencies officer) and it is assessed as more valuable that local contacts should be made between posts which would have to coordinate events in the fields, in the event of an emergency. There is also a geographic consideration - with 62 district councils and 11 police forces, it would be impractical to maintain liaison from the regional headquarters.

8. FINANCE

8.1 Anglian reported no financial constraints on emergency operations.

8.2 The Region operate both a contingency fund system (in the case of flood defence), and a system for authorising unforeseen expenditures. Essentially, the system operates on the principle of escalating costs, with the Area and Regional Duty Managers permitted to authorise spending to certain limits.

9. CONCLUSION

9.1 Anglian Region exemplify an almost Germanic sense of organisation. This is the reward of hard work shortly after the vesting of the Region during which period all departments were examined and rationalised geographically, as well as functionally, to provide the most efficient service. Subsequently modifications have been made but the general principles and structures remain.

9.2 The point has been made earlier in this report and it is worth repeating. The technology in Anglian Region is outdated and unreliable. Both communications and telemetry, on which the Region would have to depend in the event of a major incident, are acknowledged to be inadequate. That the Region still manages to provide an efficient service is testimony to the strength of the good management structures, comprehensive duty systems, rationalised structures and an 'all-informed' reporting chain.