

Thursday, May 18, 1989
Emergency Planning Committee - 12 Noon



EMERGENCY PLANNING COMMITTEE

A meeting of the Emergency Planning Committee convened in the Committee Room, 1111 Brunette Avenue, Coquitlam, B.C. at 12 noon on Thursday, May 18, 1989 with the following persons in attendance.

Mayor L. Sekora	Chairman
Ald. E. Parker	Committee Member
Ald. D. White	Committee Member
A. E. Edwards	Emergency Prog. Co-ordinator
N. Nyberg	Municipal Engineer
S. Aikenhead	Deputy Municipal Clerk

503-1 DISASTER RESPONSE PLAN UPDATE

Mr. Edwards updated members of the Committee on the Proposed Disaster Response Plan. Target date for release of plan is October 31, 1989.

Ald. White suggested that in an emergency, the use of the Canada Post postal code system would be useful in informing the public by radio which receiving sites they should attend.

503-2 COMMUNICATIONS

This report was provided to the Committee for information.

503-3 STATUS REPORT: EARTHQUAKE PREPAREDNESS

A follow-up to the Earthquake Brochure was suggested by the Committee, possibly putting a further brochure in with the water or tax notices or in the newsletter.

One thousand (1,000) colouring books on Earthquake Preparedness have been ordered. The Co-ordinator reported that School District No. 43 has agreed to distribute the approximately 10,600 colouring books needed to cover the Kindergarten through Grade Five students in Coquitlam. Approximate cost of books - 12¢ U.S. per book.

The Committee approved the following recommendation for Council consideration:

**COUNCIL
ACTION**

*APPROVED
PLS. 774*

"That an additional 10,000 copies of the colouring book on Earthquake Preparedness be ordered and these be given to School District No. 43 for distribution to Kindergarten through Grade Five students in Coquitlam."

**503-4 STATUS REPORT - PROVINCIAL EMERGENCY
PROGRAM PLAN - RESULTS OF THE PLANNING PROCESS**

This report was provided to the Committee for information.

503-5 ENVIRONMENTAL INCIDENT RESPONSE

The Municipal Engineer reported that an environmental incident in Coquitlam would be responded to on a 24-hour a day availability basis by a Municipal "Team" of at least three people. In the case of an oil spill such as we had in Como Lake, there would be a response team consisting of a Drainage Foreman, a Parks and Recreation Representative, and another Municipal Representative who would deal with other government agencies.

**503-6 TRAFFIC MANAGEMENT DURING EMERGENCIES,
CONSULTANT TERMS OF REFERENCE**

This report was received for information.

Ald. White requested that staff check with G.V.R.D. to see if they have already done a study on this.

503-7 EMERGENCY TRAINING REVIEW

It was requested by the Committee that Mayor Sekora's name be taken off the proposed list of candidates for training at Arnprior and his name be replaced with "any member of Council".

The Committee approved the following recommendation for Council consideration:

**COUNCIL
ACTION**

*APP'D
RES 175*

"That the Emergency Committee approve the proposed course loading for training municipal personnel and members of Council".

Ald. White requested that the Permits and Licence Director look into the feasibility of amending the Coquitlam Building Bylaw to require that in future all hot water tanks installed be strapped or secured in some manner to a wall.

**QUARTERLY REPORT FROM R. MUNRO
F.S.S. - DEPUTY DIRECTOR NO. 1**

The abovenoted report was tabled with the Committee for information.

ADJOURNMENT

The Chairman declared the meeting adjourned at 1:00 p.m.

Louis Sekora
Mayor

DISTRICT OF COQUITLAM

Inter-Office Communication

TO: J.L. Tonn, Municipal Manager DEPARTMENT: Administration DATE: 1989 May 11
 FROM: A.J. Edwards DEPARTMENT: Engineering YOUR FILE:
 SUBJECT: Status Report: Disaster Response Plan OUR FILE: 01 12 01

FOR EMERGENCY COMMITTEE1.00 BACKGROUND

1.01 On 1988 November 14, Council passed the following resolution:

"That Council adopt the District of Coquitlam Disaster Response Plan dated 1988 September 15 as the official community disaster response plan."

1.02 At the time that the Disaster Plan was adopted, it did not have the full input of all groups asked in the plan. The Emergency Committee instructed that each person or group should personally be contacted to confirm understanding and clarify their role in the disaster response.

1.03 The report to the Emergency Committee is attached for reference.

2.00 RESULTS OF THE PROCESS

2.01 All of the groups or persons slated to be interviewed were except for:

<u>GROUP</u>	<u>COMMENT</u>
1. Police	a briefing for Inspector McMartin is tentatively scheduled for the week of May 22.
2. B.C. Coroners Service	a briefing for the Coroners service is scheduled for the week of May 29.
3. Coquitlam Amateur Radio Club	Contact with this groups is not appropriate until the Coquitlam Communication Plan is more fully developed, using our Communications Consultant. Radio equipment is to be acquired by September 1989.
4. C.P. Rail	A briefing with CP Supervisor, Peter Hasbon is scheduled for May 12.

3.00 HIGHLIGHTS OF THE PROCESS

3.01 Information Director and Staff, Permits and Licence Director and Staff.

Have accepted their roles as per the Disaster Response Plan but are concerned that their groups are not trained appropriately to carry-out their duties.

3.02 Other Internal Staff.

Municipal Clerk, Personnel Director and the Municipal Treasurer have accepted roles but require hard copy plans in order to carry-out their roles. This requires some input from the Emergency Planning Co-ordinator.

3.03 Outside Agency Comments

PEP Zone Manager:

Advises us to remove materials related specifically to hazardous materials. Should be in fire response plan.

Zone Amulance Co-ordinator:

Have their own plan. Wanted us to include their plan directly in ours.

Royal Columbian & Eagleridge Hospitals:

Have developed extensive disaster plans. Includes a counselling service for trauma victims. Limited space and staff. A major emergency would require evacuation of some convalescing patients to local homes or special care facilities. Very well prepared.

Riverview Hospital:

Could be a receiving site for patients discharged from normal hospitals. Centennial School has been designated evacuation centre for Riverview patients. Transportation plan for patients is vague. Ties are developed with ESS personnel, needs to be continued. A specific plan developed and perhaps exercised at least in a limited way.

School District #43:

Has established an emergency committee.
Good working relations with ESS Director.
Plan has designated all schools as possible reception centres.

Canada Employment Centre:

Limited to knowledge of persons who are unemployed and likely less skilled. Would operate through their facility on Lincoln Avenue. Would be a resource for the Personnel Director for acquiring labour skills.

Coquitlam Search & Rescue:

Mostly trained in locating lost persons. Some limited abilities in light and heavy rescue related to building collapse. Not to be relied upon to do this function however. Some volunteers in North Vancouver are trained and could be utilized for light and heavy rescue.

B.C. Telephone Company:

When the normal phone system becomes overloaded, the Essential Line Treatment facility will go into effect. Our plan for utilizing ELT is covered under a separate memo. B.C. Telephone will provide status information concerning downed service during a disaster response. Emergency Operations Centre on Seymour. Communications link weak with our staff after hours if phones are out.

B.C. Hydro:


Have Emergency Operations Centre adjacent to Central Park on Boundary at Imperial. Will provide restoration to, in order of priority: 1) public safety sites, 2) plant restoration, 3) Municipal or Other Emergency Centres, and 4) public power needs. Priorities to be confirmed via GVRD radio system.

B.C. Gas:

Have Emergency Operations Centre at Lougheed and Boundary. Will restore service on the basis of need based on feedback from the Municipal EOC, public requirements, and commercial and/or industrial demands. Have developed extensive plan for handling emergency repairs. Have an excellent program for advising staff of hazards and encouraging family planning.

4.00 PROCESS COMPLETION

- 4.01 Clearly the review has revealed some training needs. These should be addressed.
- 4.02 After completion of the interviews, exercises should commence. The exercises should focus on the Municipal Response Group and should stress co-ordination. Because major emergencies happen so infrequently, it is important that the Municipal Response Group have exercises which emphasize the co-ordination required at the EOC during a major emergency.
- 4.03 In Edmonton just before the tornado of 1987, the Municipal Response Group met for the first time one month before the tornado. According to Bruce Wilson, the City of Edmonton Planning Co-ordinator, this was very helpful during the tornado response since the individuals had done some work in co-ordination prior to the event. Also, it gives a chance for Response Group leaders to assess the EOC and preplan the resources that would be required at the EOC to provide an expeditious, co-ordinated and effective response.
- 4.04 After group paper exercises have been completed, the Disaster Response Plan could be updated, then circulated to all key personnel who would be involved in the response. Target for release of Plan is 1989 October 31.



A.J. Edwards, P. Eng.
Emergency Planning Co-Ordinator

For Information

Att.

DISTRICT OF COQUITLAM

Inter-Office Communication

TO: J. L. Tonn, Municipal Manager DEPARTMENT: Administration DATE: 1989 May 11
 FROM: A.J. Edwards DEPARTMENT: Engineering YOUR FILE:
 SUBJECT: Status Report: Communications OUR FILE: 01 12 01

FOR EMERGENCY COMMITTEE1.00 PARTITION PREPARATION AND PLAN LOCATION

1.01 In the 1989 budget, there is provision for \$3,000 to acquire moveable partitions adjacent the EOC. The purpose of the partitions is to establish communications centres outside the EOC room to house communications groups namely: Fire, Police, Engineering Operations, GVRD (including GVRD intermunicipal net) and Amateur Radio. The proposed layout for this is shown attached. The cost is expected to be about \$3000.

2.00 PROPOSED COMMUNICATIONS EQUIPMENT SPECIFICATION STUDY

2.01 In the 1989 budget, there is provision for \$5,000 to carry-out a communications equipment specifications study. The terms of reference are attached and these have been sent to Peter Anderson of the Department of Communications at Simon Fraser University. Mr. Anderson is recognized as a local authority on Disaster Communications particularly as they relate to Amateur Radio and is an excellent person to do the study.

3.00 ESSENTIAL LINE SERVICE (LINE LOAD CONTROL).

3.01 During and after a disaster, telephone communications are expected to fail. The system is modified by B.C. Tel to provide a preferential line service; ie some preselected telephone lines retain full service while the majority of telephone subscribers have no dial tone and could only receive calls.

3.02 The essential line service designers have resources which they must control during disaster conditions; ie fan-out capability. At the time of writing, several candidates have been identified (see attached list.) The remaining persons to designate include:

- a) Fire Personnel and Volunteers;
- b) Police Personnel and Auxiliaries;
- c) Logistics Contacts, Suppliers, Contractors; and
- d) Simon Fraser Health Unit Personnel

For Information



A.J. Edwards
 Emergency Planning Co-Ordinator

AJE:sh
 Att.
 cc Bill Wiseman

DISASTER OR EMERGENCY

COMMUNICATION STUDY

TERMS OF REFERENCE

The District of Coquitlam seeks the services of a specialist in Communications, particularly Amateur Radio Communications for use in Disaster Response situations. The specialist should ideally be familiar with Amateur Radio Equipment, have a broad understanding of emergency communication theory and understand the principles of emergency response activities in municipalities.

Phase I

Phase I of the study will focus on the equipment acquisition and installation. The municipal radio installation should cost no more than \$2,000 and have the capability of local, regional and international transmission receiving.

Phase II

The consultant will establish procedures for the use of the system, including:

- a. communication protocols;
- b. user instructions for all radio controls, and
- c. maintenance instructions.

The consultant will identify potential networks and stations with which communication would be established under disaster conditions:

- . Provincial Emergency Program
- . Federal Emergency program
- . Regional and Local Organizations
- . Amateur Radio Volunteer Organizations
- . Local Emergency Social Services Centres:
 1. Centennial Senior Secondary, 570 Poirer Street
 2. Como Lake Junior Secondary, 1121 King Albert Avenue
 3. Dr. Charles Best Junior Secondary, 2525 Como Lake Avenue
 4. Montgomery Junior Secondary, 1900 Edgewood Street
 5. Sir Frederick Banting Jr. Secondary, 820 Banting Str.

Contact person to view the installation location is Doug Williams, Service Centre Superintendent, 939-6421 - Local 26.

Contact person for specifications and operations is Mr. Bill Wiseman, Emergency Communications Director. In his absence, the Emergency Planning Coordinator is available for comment. We would like to have the completed study by 1989 July 01 and all equipment installed by 1989 July 15. Costs should include a training session with the Emergency Communications Director and the chosen Amateur Radio Operator in charge of Coquitlam Emergency Response Communications.

Please confirm costs and details of the study in a proposal to the Emergency Communications Director. The proposal should be received by 1989 May 17.

D I S T R I C T O F C O Q U I T L A M

Inter Office Memo

TO: J.L. Tonn, Municipal Manager DEPARTMENT: Administration DATE: 1989 May 02
FROM: A.J. Edwards DEPARTMENT: Engineering FILE:
SUBJECT: STATUS REPORT: EARTHQUAKE RESPONSE PLANNING OUR FILE: 01 03 12

FOR EMERGENCY COMMITTEE1.00 BACKGROUND

- 1.01 In 1988, the Association of Professional Engineers prepared a brief for the Provincial Government entitled "Seismic Risk in B.C." The document served to help rekindle the planning effort of the Provincial Government and is an excellent source of background information for public consumption.
- 1.02 Over the past year the Provincial Government, through the Provincial Emergency Program, has been promoting better earthquake preparation at all three levels of government.
- 1.03 From April 18 to April 20, the Provincial Government sponsored a multi-agency conference at the Justice Institute in Vancouver. The purpose of the conference was to provide information to Provincial Emergency Program staff to help prepare an Earthquake Preparedness Plan for the Provincial Government. The list of persons at the conference are attached for reference as Appendix A.
- 1.04 Persons involved in the seminar were divided into six syndicates to discuss and prepare solutions for six problem sets, attached as Appendix B, (except for problem 6); problem 6 dealt with communications systems available privately and publicly and lines of authority.
- 1.05 In addition to the conference, several municipal employees attended the debriefing on Armenian and Soviet rescue efforts. The lessons from the Armenian event, from the writer's and a representative from the GVRD perspective, are attached.
- 1.06 Finally, on March 21 of this year, an earthquake brochure was circulated to the homes in Coquitlam. About ten enquiries were received and the typical questions and responses given are attached as Appendix D. Also, about 1,000 colouring books on earthquake preparedness have been ordered from Hanna Barbara Productions in Los Angeles.

2.00 DISCUSSION

- 2.01 The Provincial Government is beginning to prepare realistic plans for emergency preparedness. The local emergency planning co-ordinators for lower mainland municipalities agree that this is the most forceful initiative in 15 years.
- 2.02 The earthquake brochure was well received, judging on phone calls that were received. However, the low number of ten calls indicates general public apathy. Most of the calls were from people who were concerned about the anticipated date and severity of major earthquakes.
- 2.03 While public awareness increases after disasters rather than before, there is a continuing need to keep the emergency issues in focus. When earthquakes strike, people are left to fend for themselves for up to 72 hours before help arrives. The brochure circulation, supplemented by colouring books, help to address this need.

Submitted for information.



A.J. Edwards, P. Eng.
Assistant Municipal Engineer

AJE/fb
Encl.

B.C. Crisis Management Seminar
April 1989

List of Participants

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B.C. CRISIS MANAGEMENT SEMINAR

NARRATIVE 1 PROBLEM 1

PUBLIC AWARENESS

NARRATIVE

1. Information is a critical part of any disaster plan yet few plans make suitable arrangements for disseminating disaster-related information. Information made available prior to an earthquake can prevent deaths, injuries, and damage. In addition, the provision of accurate, timely information can contribute significantly to morale and effective response within the community.

2. Disaster plans should include a multi-public awareness program; information to be provided to the general public:
 - education of emergency officials and first responders public awareness;
 - prior to an earthquake;
 - during the immediate response to an earthquake; and
 - at the start of reconstruction following an earthquake.

3. The dissemination of information prior to an earthquake carries a double-edged sword: on the one hand there exists a great need for public education, but on the other hand, there is the possibility of frightening people needlessly, and creating community angst.

PROBLEM

- Q1. List your goals for increasing awareness prior to an earthquake and what means will you employ to achieve them.

Time to consider: 45 minutes

Time to discuss: 45 minutes

B.C. CRISIS MANAGEMENT SEMINAR

NARRATIVE 2 AND PROBLEM 2

PLAN COMPONENTS

"The immediate problem in a disaster is neither uncontrolled behaviour such as looting nor intense emotional reaction such as panic, but deficiencies of interorganizational co-ordination."

NARRATIVE

1. When an earthquake strikes it should not be a time of interorganizational disputes and competition. To prevent possible misunderstandings the disaster plan should include formal agreements between all levels of government and private agencies. To ensure an optimum response when an earthquake occurs, all aspects of disaster response should be adequately covered in the disaster plan.

PROBLEM

- Q1. List the components that should be considered in a provincial disaster plan and who should be designated the lead for each one.
- Q2. What components of municipal plans would be different from the provincial plan?

Time to consider: 45 minutes
Time to discuss: 45 minutes

B.C. CRISIS MANAGEMENT SEMINAR

NARRATIVE 3 AND PROBLEM 3

BUILDING SAFETY

NARRATIVE

1. The structural failure of buildings in a severe earthquake will be the single most important direct cause of loss of life and injury. In the Greater Vancouver and the Capital Regional Districts, many older buildings (pre 1950) would collapse and even some newer buildings will suffer major structural damage. Damage to hospitals, police stations, firehalls, schools and other critical buildings would severely disrupt the disaster relief effort.
2. The cost of upgrading all existing buildings to modern building code standards would be prohibitive, but a strong case could be made to retrofit, or re-construct certain high risk buildings needed for post-disaster relief.

PROBLEM

- Q1. Outline the key elements of a plan for upgrading high risk buildings in the G.V.R.D. and C.R.D.
 - a. Which categories of buildings should be included in the plan (use and risk of fatalities)? What level of damage and potential for fatalities is acceptable? What criteria should be used to determine the categories of buildings?
 - b. Should the standards for retro-fitting be equivalent to new construction code requirements, or should they be a lesser, more practical standard?
 - c. What levels of government and which agencies should implement the plan, and how should it be funded?
 - d. What should be the time frame for completion and what measures are necessary to ensure the plan does not stall?

Time to consider: 1 hour
Time to discuss: 1 hour

B.C. CRISIS MANAGEMENT SEMINAR

NARRATIVE 4 AND PROBLEM 4

SEARCH AND RESCUE

NARRATIVE

1. One of the critical areas of concern in a major earthquake is the requirement for a rapid search and subsequent rescue of personnel, especially those in collapsed structures. Historical data from China, Mexico and most recently Armenia reveal that the death rate rises dramatically from 24 to 36 hours after an earthquake.

2. Therefore Search and Rescue must be organized with a good control system with direction and communications and must be structured, funded and trained to react the moment an earthquake strikes.

PROBLEM

- Q1. Search and Rescue resources in the Provincial Emergency Program are rural oriented for lost in woods activities and are not trained for collapsed structure search or heavy rescue. We cannot rely on first responders (police, fire and ambulance) to do the job because they are already overcommitted. How do you consider urban search and rescue should be:
- a) organized and structured?
 - b) directed, controlled, provided communications?
 - c) trained?
 - d) funded?
- Q2. Consider what sources of personnel should be used and who should do what at which level of government (federal, provincial, regional district, municipal and others).

Time to consider: 1 hour
Time to discuss: 1 hour

B.C. CRISIS MANAGEMENT SEMINAR

NARRATIVE 5 AND PROBLEM 5

EVACUATION AND TREATMENT

NARRATIVE

1. Rapid evacuation and treatment of mass casualties is imperative following an earthquake of catastrophic proportions. Casualties may number in the thousands. Roads and bridges will be damaged and some hospitals rendered inoperable.
2. Planning, funding and organizing at appropriate levels of Government (Federal, Provincial, Regional District, Municipal and others) is essential. Additional resources will have to be utilized as first responders (ambulance, police and fire) will be overcommitted in short order.

PROBLEM

- Q1. What would be the alternative ~~is~~ ^{is} treating a large number of casualties if several of our major receiving hospitals are damaged?
- Q2. a) What resources would be required to treat and evacuate many casualties from an urban area with roads and bridges damaged?
- b) How should each level of Government plan to ensure a structured, organized and controlled response?

Time to consider: 1 hour
Time to discuss: 1 hour

MURRAY.

B.C. CRISIS MANAGEMENT SEMINAR

NARRATIVE AND PROBLEM

DAMAGE AND CASUALTY ASSESSMENT

NARRATIVE

1. In order for rapid and effective search and rescue to occur, it is necessary for information regarding damage and casualties to reach appropriate agencies with minimum delay.
2. Structural failure will affect many different kinds of facilities. Damage can be expected to affect Long Term Care facilities, with many non-ambulatory residents; hospitals, with a variety of special problems that could include evacuations of patients with highly contagious diseases; as well as hotels and apartments, office buildings and school.
3. Another consideration is damage to industrial sites with toxic substances. Potential for wide spread and long term devastation might require these areas to take high priority.
4. While damage can be assessed through aerial reconnaissance, casualties will not be as obvious from the air. Accurate casualty assessment will require reports from ground based persons at each site. Areas hardest hit are often unable to report.
5. Information from a wide area and diverse sources must reach a central agency in order to effectively assess priorities.
6. Bridges and buildings may appear to be intact, however in reality are totally unstable and unsafe for use.

7. Several problems arise in the assessment phase immediately following a major earthquake.
 - A. Aerial reconnaissance may be difficult to mobilize as a result of:
 - i. unrelated commitments outside the impact area, and
 - ii. damage to at least some of the existing helicopter and small fixed wing fleet.
 - B. As a result of slumping, landsliding, washouts due to dam failure, or bridge and overpass collapse, ground/road surveys may be difficult in some parts of the area and impossible in others.
 - C. Co-ordinators may encounter considerable difficulty in organizing damage and casualty assessment crews as a result of communication failures resulting from power outages, downed lines, or damaged transmitters and receivers.
 - D. Key people inside institutions such as hospitals, and long term care facilities are quite capable of assessing damage and determining casualties within acceptable limits. They will, however, be faced with the problems of:
 - i. what information to transmit,
 - ii. to whom should it be transmitted,
 - iii. by what method must it be transmitted.

PROBLEM

- Q1. What do you perceive as the most critical problems?
- Q2. What strategies would you employ during the planning and preparation phase to reduce the effects of the problem(s) which you have identified?

Time to consider: 1 hour
Time to discuss: 1 hour

B.C. CRISIS MANAGEMENT SEMINAR

NARRATIVE AND PROBLEM

EMERGENCY SOCIAL SERVICES

NARRATIVE

1. If a catastrophic earthquake occurred during working and school hours, tens of thousands of family members would be isolated from one another with no means of transportation or communication to reunite or to ensure each other's safety.
2. Thousands of homes would be rendered uninhabitable due to structural damage or disruption of electricity, gas, and water supplies. Thousands of people may refuse to sleep under a roof for fear of aftershocks. If the weather is cold or wet, this will pose an even greater difficulty.
3. With each successive hour following the earthquake, the numbers of people requiring shelter, feeding, and clothing will continue to swell. Normal avenues of meeting these needs will be unavailable due to blocked transportation routes, structural collapse, and utilities failure.
4. Dependent or vulnerable people will require management and support. These people include children separated from their parents, many of the elderly, and physically, mentally, or psychiatrically handicapped individuals.

PROBLEM

- Q1. People's needs for information about loved ones, for shelter, or for feeding services cannot wait long periods before being met. What steps should be taken now to shorten the time between the occurrence of the earthquake and meeting of people's Emergency Social Services needs?
- Q2. Most municipalities in Southwestern B.C. have ESS plan in place or are actively working on one. What steps need to be taken now to ensure co-ordination of these resources following a catastrophic earthquake?
- Q3. During the immediate aftermath of a catastrophic earthquake, resources and supplies for shelter and feeding will be insufficient to meet everyone's needs. How should these be prioritized; who should get served first?

Time to consider: 1 hour
Time to discuss: 1 hour

DISTRICT OF COQUITLAM

APPENDIX "C"

Inter-Office Communication

TO: See Distribution

DEPARTMENT:

DATE: 1989 Feb. 20

FROM: A.J. Edwards

DEPARTMENT: Engineering

YOUR FILE:

SUBJECT: Armenian Earthquake Debriefing
Seattle, Washington, 1989 February 13

OUR FILE:

TO: Mayor Sekora
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N.W. Nyberg
R. White
R. Camporese
D. Johnson
B. Martin

J.L. Tonn
S. Aikenhead
D. Buchanan
Dr. N. Arnott
D. Cunnings
B. Wiseman

Attached, please find debriefing notes for the recent Armenian earthquake as reported by a team of American specialists sent to Russia to help in rescue efforts.



A.J. Edwards, P. Eng.
Assistant Municipal Engineer-Operations

AJE:sh

Att.

ARMENIAN EARTHQUAKE BRIEFING
February 13, 1989 Seattle

Continuing Education Committee
Earthquake Engineering Research Institute
in cooperation with
National Research Council
US Geological Survey

This briefing is based on the reconnaissance team visit of the presenters and others conducted under the auspices of the Earthquake Engineering Research Institute's Learning from Earthquakes Program and the National Research Council's program of disaster investigations. The partial support for these programs by the National Sciences Foundation and other federal agencies is gratefully acknowledged. The briefing was organized by Charles C. Thiel Jr. for the Continuing Education Committee of EERI as part of its effort to inform the professions on current developments in earthquake hazards reduction. Local arrangements were made by James Carpenter and C.B. Crouse.

PROGRAM		
Time	Speaker	Topic
4:00	Charles Thiel, EERI	Introduction, presiding
4:05	Armen der Kiureghian, UC Berkeley	Overview of the earthquake
4:35	Roger Borcherdt, US Geological Survey	Seismology and geology
5:05	Fred Krimgold, VPISU	Societal response and search and rescue
5:30	Eric Nogi, Johns Hopkins	Emergency medicine
5:50	Loring Wyllie, Degenkolb and Associates	Engineered structures
6:40	Peter Yanev, EQE Incorporated	Industrial facilities and nuclear power plants
7:10	Adjourn	

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Technical Committee on Lifeline Earthquake
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Structural Engineers Association of Washington
National Association for Search and Rescue
California Office of Emergency Services
Interagency Committee on Seismic Safety in Construction
Pacific Gas and Electric
California Department of Conservation,
Division of Mines and Geology
Business and Industry Council for Emergency Planning
and Preparedness

NOTES ON THE ARMENIAN EARTHQUAKE DEBRIEFING: University of Washington

DATE: 1989 February 13

The attached agenda describes the nature of the Earthquake Engineering Institute and the speakers and the topics that were discussed at the debriefing.

The following summarizes the major points made by the speakers.

Dr. Armen der Kiureghian of the University of California at Berkeley.

Dr. Kiureghian gave a brief history of earthquakes in the Armenian area since 1900. There have been five since 1900 that have been over 6.9 on the Richter scale and two that were over 7.5. The earthquake that occurred on 1988 December 07 had two main strikes; the first had a Richter scale reading of 6.9 and the second 5.8.

Roger Borcherdt, Seismic Information Specialist of the U.S. Geological Survey.

Mr. Borcherdt's team arrived in Armenia four days after the event and did a detailed analysis of the interaction at the plates of the fault line using seismological instruments brought in from the U.S. (The Russians did not have this equipment in Armenia). He reported that the earthquake was caused by a longitudinal shift of the two plates at the fault line extending about 2 metres in length. Coincidentally, there was a 0.5 metre lateral shift. The fault line length was approximately 8 kms. long and its inclination was approximately east-west. It was located just west of the city of Spitak. Damage was light in areas where soil conditions were relatively stable, i.e. rock areas or dense soil materials. Where soil conditions were such that liquefaction occurred as at Leninakaln, damage was quite severe. In addition, damage was greatest near the epicentre of the earthquake and generally became less the further away. However, Leninakaln is 40 km from the epicentre but because of its soil conditions (a former lake bottom), it experienced considerable damage.

Fred Krimgold, Reported on the Societal Response And Search & Rescue.

Mr. Krimgold is with the U.S. Office of Foreign Disaster Assistance. Krimgold's crew landed in Russia 4 days after the earthquake and by that time there was very little likelihood of an affective rescue operation. At emergency sites, traffic control was an enormous problem. Traffic jams often lasted for several hours before rescuers could arrive at a rescue site. At one location, they rescued a lady that had been trapped underneath a fridge for six days. The operation took 5 hours and included 15 specialists and considerable equipment and lighting supplies. At another location tracking dogs found scents of individuals that were possibly still alive. However, after assessment of the logistics involved in removing the rubble, it was decided to abandon the site without making an attempt to rescue. It was simply considered impossible given the configuration of the rubble. Krimgold made 5 conclusions of his experiences:-

1. The recently constructed buildings (post 1978) were inadequate to withstand earthquake shock. In contrast, older buildings fared very well.
2. Rescue efforts must occur within the first two days after the event.

3. Equipment has to be available very quickly and has to be appropriate for the rescue task.
4. A massive man-power response consisting of qualified rescue specialists must be assembled. The response from other nations consisted of 18 U.S., 200 French and 115 Austrian people. This, combined with the Russian forces which consisted mostly of the Army, was simply inadequate to handle the rescue effort in an affective period of time.
5. The conditions in Armenia were not all that much different from the conditions here. If we experienced a more severe earthquake, we may have equal devastation.

Eric Nogi of John Hopkins University Discussed Emergency Medicine.

Mr. Nogi made several points.

1. The time of the event is very crucial in the number of casualties that can be expected. The Armenian event happened at approximately 11:45 a.m. during the time in which children were at school and industrial workers were working.
2. The younger and older aged groups were harder hit than the middle aged groups.
3. There were two types of deaths involving crush victims. The first type is immediate death as soon as the building collapses. The second type involves a victim that has been partially crushed. Either a leg, arm, or some other part of the body gets crushed and various toxics created by the human internal defense system gather at the wound. Then, after rescue, the toxics flow back into the blood stream causing kidney or heart failure.
4. Victims should be rescued as early as possible but no later than after the second day to have any real chance in making an affective rescue. The majority of people that perished did so by the end of the second day.
5. There was no public threat from dead bodies causing disease, etc.
6. Starvation after the earthquake was not a problem because of the influx of food and other supplies.
7. Virtually, all emergency admissions occurred in the first seven days. Most of the international medical specialists arrived after seven days and made very little significant contribution.
8. The types of injuries that were recorded were primarily related to those of dust inhalation. Other injuries included compartment syndrome (deficit of blood), limb fractures, shock from hemorrhaging or dehydration, severe burns, hypothermia, and head and neck injuries.

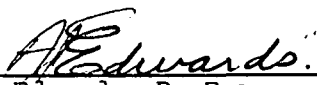
He summarized by identifying three significant shortcomings.

1. Failure of adequate alerting internationally so that appropriate qualified people were available when they could be of maximum assistance.
2. A lack of rapid primary stabilization of the patients under hospital care. Most of the patients didn't get the early attention that they needed and therefore died or suffered long term disabilities.
3. Due to the way the Russian system of hospitalization is organized, the distribution of patients was poor. Medical personnel having the expertise in treatment of crush victims and having access to specialized equipment were located typically at one or two facilities. Other hospitals were not available.

Loring Wyllie of Degenkolb and Associates Discussed the Engineered Structures

Mr. Wyllie reported that virtually all buildings were constructed of masonry and/or concrete. For masonry buildings, end walls tended to fall and the centre of the building to remain in tact. Precast concrete buildings tended to collapse in the middle. Column splices typically were poorly constructed and tended to either rotate or bend loosening the support for floor slabs. Also shear walls typically failed at centre span, staircases often collapsed for lack of vertical support, and column splices and floor, shear wall, and column joints were often not held in place properly because of inadequate restraining dowels. Finally, diaphragms to hold up floor slabs were not placed as typical in North American construction. The conclusions of Mr. Wyllie were fourfold:

1. Construction often tended to be precast concrete frame systems with very little concrete quality control.
2. Rigid concrete or masonry as opposed to ductile, steel or wood frame construction was a major contributing factor to building collapse.
3. Diaphragms should be placed to support each floor.
4. Strict on site quality control and workmanship are essential during building construction.



A.J. Edwards, P. Eng.
Emergency Planning Co-ordinator

Att.



EERI's ARMENIAN EARTHQUAKE BRIEFING

The Earthquake Engineering Research Institute (EERI) sent a reconnaissance unit to the site of the Armenian earthquake of early December 1988, arriving about six days after the event. The EERI is a multi-disciplinary body including engineers, geologists and physical scientists, medical and emergency response personnel. Similarly, the reconnaissance team was multi-disciplinary. On February 13, 1989, the EERI sponsored a briefing of the observations and lessons of the team, held at the University of Washington. The meeting's agenda is attached. This report has been prepared from notes taken during the presentations.

It is definitely not the purpose of this report to imply that, if an earthquake ever strikes Greater Vancouver, its consequences will be similar to that in Armenia. The Armenian experience may, however, provide lessons to guide local planning.

By way of apology, aspects of the presentations dealt with medical, engineering or geo-physical details which this writer could not comprehend; these details are not reported. A full, written report of the reconnaissance team's findings will be distributed to the meeting's participants by about early May. Technical details will likely be in that report.

Armen der Kiureghian: Overview of the Earthquake

The presenter, an Armenian-American, began with an account of Armenia's culture, history and geology. It was noted that:

- Much like the West Coast, Armenia is the place of meeting of a number of tectonic plates. It has had a long history of seismic and volcanic activity. Volcanic tufa is a common building material of the region, but one that is weak, porous and reacts unfavourably with cement.
- Old buildings with their thick (compression) walls and arches are fairly earthquake resistant. Post-war buildings, built in very limited designs according to standard Soviet formulas, were the ones to fail.
- The earthquake was relatively moderate as they go, equivalent to about 6.5 on the Richter scale. (Southern California experienced an earthquake of this magnitude in the early 1980's, with no equivalent loss of life.) The fault line was about 6 miles long, with a vertical slip of about 2 metres and a sideways slip of 0.5 metres. A particularly lethal feature, however, was the earthquake's shallowness, characterized by long-period waves.

- Recent disputes between Armenia and Azerbaijan had led to about 170,000 Armenian refugees returning from Azerbaijan, with an equivalent number of Azerbaijanis returning there. With no good estimate of the settlement of the refugees prior to the event, Soviet authorities may never get a good estimate of the number of earthquake victims.
- The earthquake occurred at about 11:45 a.m., a time when most people are in their homes, schools, offices and factories. By contrast, the Mexico City earthquake occurred at about 7:00 a.m. when proportionately more people are en route to their day's activities.

Roger Borchardt: Seismology and Geology

This presenter went into detail in these subject areas. It was noted that:

- Although much of the Soviet seismographic instrumentation was destroyed, the evidence indicates that there were two quakes in quick succession (1-2 minutes).
- It appears that most of the damage was due to the effect of long period waves, not from the slip. Also, it appears that most of the buildings that came down, came down during the second event, having been weakened by the first.
- Cities built on the alluvial plain (in the valley) suffered severe damage. Those built on consolidated sediments and rock (against the valley walls) fared quite well.

Fred Krimgold: Societal Response and Search and Rescue

The presenter's observations included the following:

- This was the first time since World War II that the USSR has accepted foreign assistance for a domestic incident. Several nations sent emergency response teams.
- Hospitals within the earthquake area were destroyed, taking with them most of the health professionals. Similarly, most communications installations (telephone, telegraph) were destroyed.
- Although news photos had depicted the lack of food, shelter and other services in the impact area, the Soviets had decided not to provide these services there, but instead to evacuate the areas. Although some bereaved survivors are reluctant to leave, Krimgold evidently endorses this strategy.
- Although the evacuation centre was only about 60 kilometres away, collisions and congestion between refugees and evacuees (going out) and military, and heavy equipment and returning evacuation vehicles (going in) led to transit times of about five hours for the 60 kilometre trip.

- Most "easy" rescues can be made within the first few hours, and in terms of reducing mortality, a massive and effective response within the first 24 hours is critical. As noted, the US team arrived about six days after the event. Along with the French team, the US team was the best equipped with tools and portable devices, short of having heavy equipment. Nevertheless, the Americans found that their equipment was largely useless; the picture of a man with an 8-inch concrete saw facing a 12-inch floor slab was shown as an example.
- Another telling example was the following: having located a victim to be rescued, a 15-man team of trained specialists then spent five hours removing debris by hand in a human chain. This was at a time when they estimated that from 3000-5000 victims still remained to be rescued. Nevertheless, considering the short supply of heavy equipment and the huge and time consuming "brute force" effort that is often required to get the heavy equipment into place so that it can be used, the team considered this to be the best use of its time. Krimgold feels this example demonstrated the massive human effort that is required in disaster response.
- Western press reports may have implied that the Soviet army "stood back" from the disaster relief. Krimgold stated that this was not so. However, the army did not have the equipment to assist effectively. A picture of a tank with a broken transmission blocking a thoroughfare was shown as an example of the futility. Krimgold emphasized, however, that he feels that the equipment required for earthquake response may not yet exist anywhere. (American equipment, he suggested, is thought to be the best in the world but is effective for little more than rescuing victims from crushed vehicles, not crushed buildings.) He called for more effective equipment and rescue techniques to be designed.
- Noting that the area was only a "moderate risk" area, Krimgold concluded ominously that "it could happen anywhere".

Dr Eric Nogi: Emergency Medicine

Dr. Nogi's job was to look at the situation in the capital city's hospitals where the injured evacuees were taken:

- He showed statistics from other recent earthquakes (Mexico, California, Peru) that indicate that the ratio of injured to dead is typically 2 or 3 to 1. In Armenia, the ratio was much lower.
- He showed graphs of deaths over time. The plot was much higher in the first two days, being the immediate victims. Nogi emphasized the importance of massive early response within the first "Golden 24 Hours" when victims can be rescued and treated. Deaths remained

high in the 3-5 day period as victims succumbed to their injuries. Most disturbing to Dr. Nogi was the observation that deaths remained high in the 6-10 day period, and that about 30-40% of victims that were "pulled out alive" after the first few days subsequently succumbed.

- A large number of the subsequent deaths of rescued victims were unavoidable, deaths being due to massive fractures, internal injuries, dehydration, loss of blood, exposure to cold and dust inhalation. Also, crush injuries can lead to kidney failure, and it was simply not possible to assemble enough dialysis machines to meet the requirements. Yet, a large number of deaths were avoidable:
 - Although area medical staff and services were wiped out, primary, "front-line" services were never restored to an adequate level. Poor communications between the impact area and the evacuation centre meant that the centre was often unprepared to deal with special-need victims.
 - Frequent deaths occurred during the five hour transit. Many of these deaths, especially those due to shock and dehydration would have been avoided through better primary stabilization. The example of hypothermic victims dying in the heated ambulances was also cited.
 - In some ways, the Soviets were victims of their own pre-planning. Knowing that they are in a moderate risk area, the Soviets concentrated their special personnel and equipment at designated hospitals. Meanwhile, it was largely "business as usual" at other hospitals and community health centres, even though basic medical care could have saved many victims. (Dr. Nogi showed a graph depicting the pattern of victim arrival - peaking at the 2-3 day point - versus the arrival of medical assistance from the rest of the USSR and other countries - peaking at the 6-8 day point. Victims arriving after about the 6-7 day point were largely suffering from depression and other psychological and psychosomatic disorders.)
- Dr. Nogi dispelled two wrong notions that might distort either the pre-disaster planning or the actual emergency response. First, dead bodies do not pose a threat to public health or to the individual search and rescue workers, excepting only where the specific victims were previously diseased (eg. hepatitis). Second, starvation is not a major problem, and efforts should not be inordinately devoted to this matter, for example, in the initial allocation of transport.

- Dr. Nogi's summary was that the major problems of the medical response in Armenia partly reflect on the particular Soviet circumstances but could also arise during the confusion of a major incident anywhere in the world. The main problems were: poor communications between the site and the medical centres, leading to failures to alert; a lack of primary stabilization on site; long transport times; and, poor pre-planning leading to poor patient distribution.

Loring Wyllie: Engineered Structures

Earthquake scientists have a saying: "Earthquakes don't kill people, buildings kill people." This may be less the case in Greater Vancouver where certain areas may be subject to liquefaction and flooding and others may be subject to landslides. Nevertheless, it was certainly the case in Armenia.

- There were only four distinct structure types in the epicentral area. Bearing wall masonry buildings, generally the older buildings, fared quite well. In fact, older sections of some cities that were elsewhere devastated were largely untouched.
- "Modern" buildings come in three basic forms. These include pre-cast concrete frame design, panel buildings, and lift slab design. Of these, only the panel buildings did not suffer a high percentage of catastrophic failure, albeit that many standing buildings of all types are no longer habitable.
- The Soviet building system features standardized design with limited variation, few suppliers, no competition in the erection industry, limited variation of design to fit local conditions, virtually no rejection of materials or completed works and virtually no interrelation between the designers in Moscow and the on-site superintendents. The EERI team obtained construction drawings and visited buildings under construction in unaffected areas to inspect construction practices. These inspections showed both poor design and incredibly shoddy fabrication. (Panel buildings survived - often amid the rubble of other building types all around them - mainly due to significant overdesign/redundancy. This overdesign may have been fortuitous, but Wyllie suggests it should be present in all buildings in seismic areas.) Soviet buildings showed insufficient ductility, faulty ties between structural members, and inadequate provision of shear walls.
- Soviet building code standards were also faulty. Both discretionary and authorized downward revisions in building practice had been allowed in recent years. Only single stair wells have been required; several photos were shown of collapsed concrete stair cases stacked one on top of the other at the bottom of the stairwell, no doubt killing some people and preventing others from leaving the building.

- Steel buildings fared quite well, likely due to their higher ductility and better joints. Several photos were shown of intact steel skeletons with their (former) masonry exterior walls lying in rubble.

Peter Yanev: Industrial Facilities

Yanev reported on his visits to factory sites, refineries and power generation, transforming and transmission facilities.

- Most factories built to the Soviet concrete frame formula collapsed with large loss of life. Steel frame factories generally survived, with most damage to interior equipment being due to falling walls and dividers. As Yanev pointed out, the value of equipment within buildings, not to mention people, is usually several times the value of the buildings.
- Power generation sites, including nuclear power stations just outside the impact area, survived largely intact. Nevertheless, the Soviets have determined that several of their nuclear sites in the area could not withstand further or more severe earthquakes and have decided to shut them down. (Yanev noted that identical plants in other areas of similar seismic exposure are not being shut down.) Transmission towers, being made of steel, suffered little damage. Transforming sites suffered a fair degree of damage - cracked ceramic insulators and transformers falling off their pedestals. However, the Soviets have mobile transforming equipment they were able to put in place quickly. Yanev noted that Soviet cabinets containing instrumentation are significantly stronger than those used in North America. He called for stronger US cabinets; a photo was shown of a cabinet with functioning instruments holding up a failed wall and roof. Overall, power delivery, if interrupted at all, was restored quite quickly.
- Refining equipment, being steel, remained intact. Similarly, steel piping, both in refineries and in other types of factories, fared well. Several vertical storage tanks, but not all, collapsed and crumpled. Horizontal storage tanks remained intact, although there were frequent instances of the collapse or tilting over of their masonry pedestals.

Overall Impression from the Presentations

Despite wry comments and "gallows humour," the presenters showed that they were disturbed by the conditions they observed, and that they are committed to the cause of improving U.S. building design and of improving U.S. emergency response equipment and techniques. We can hope that our building codes and construction practices are such that situations caused by the Soviet "houses of cards" will not occur here. The Soviets' loss of hospitals and communication centres caused particularly severe problems we

would wish to avoid. Nevertheless, my strongest impression related to the chaos, confusion, congestion, mis-communications and lack of communications that prevailed in this situation and that may be difficult to avoid in similar situations. Also, while good equipment in sufficient supply is needed, massive "brute force" manual effort is also indispensable. Pre-planning might therefore also focus on "low tech" approaches to crowd control and motivation.

W:2:259

ARMENIAN EARTHQUAKE BRIEFING
February 13, 1989 Seattle

Continuing Education Committee
Earthquake Engineering Research Institute
in cooperation with
National Research Council
US Geological Survey

This briefing is based on the reconnaissance team visit of the presenters and others conducted under the auspices of the Earthquake Engineering Research Institute's Learning from Earthquakes Program and the National Research Council's program of disaster investigations. The partial support for these programs by the National Sciences Foundation and other federal agencies is gratefully acknowledged. The briefing was organized by Charles C. Thiel Jr. for the Continuing Education Committee of EERI as part of its effort to inform the professions on current developments in earthquake hazards reduction. Local arrangements were made by James Carpenter and C.B. Crouse.

	PROGRAM	
Time	Speaker	Topic
4:00	Charles Thiel, EERI	Introduction, presiding
4:05	Armen der Kiureghian, UC Berkeley	Overview of the earthquake
4:35	Roger Borchardt, US Geological Survey	Seismology and geology
5:05	Fred Kringold, VPISU	Societal response and search and rescue
5:30	Eric Nogi, Johns Hopkins	Emergency medicine
5:50	Loring Wyllie, Degenkolb and Associates	Engineered structures
6:40	Peter Yanev, EQE Incorporated	Industrial facilities and nuclear power plants
7:10	Adjourn	

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Electric Power Research Institute
National Center for Earthquake Engineering
Research, Buffalo
Office of Foreign Disaster Assistance, US AID
Technical Committee on Lifeline Earthquake
Engineering, ASCE

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California Seismic Safety Commission
Applied Technology Council
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Southern California Earthquake Preparedness Project
Structural Engineers Association of Washington
National Association for Search and Rescue
California Office of Emergency Services
Interagency Committee on Seismic Safety in Construction
Pacific Gas and Electric
California Department of Conservation,
Division of Mines and Geology
Business and Industry Council for Emergency Planning
and Preparedness

D I S T R I C T O F C O Q U I T L A M

Inter Office Memo

TO: Rena Thillman DEPARTMENT: Engineering DATE: 89 April 26
FROM: A. J. Edwards DEPARTMENT: Engineering FILE:
SUBJECT: POSSIBLE QUESTIONS ABOUT THE EARTHQUAKE BROCHURE OUR FILE: 01 12 04

1.00 BACKGROUND

- 1.01 An Earthquake Preparedness Brochure was recently distributed throughout Coquitlam. Approximately one month has passed and we have received several questions regarding the brochure. This memo discusses answers to the most frequent questions.

1.01 IS THERE ANYTHING ELSE I SHOULD PREPARE FOR?

The Earthquake Brochure is useful as a guide for families to prepare for interruption of normal services during any emergency. While every effort will be made by Municipal, Provincial and Federal Governments to help, there is a strong likelihood that the public may be without water, sewer, telephone, medical aid and public transportation for days following a severe earthquake or other similar event.

- . It is important to have a reserve water supply.

Alternative lighting sources should be available. Emergency communications should be planned: when the telephone system is out of service, arrange to pass messages among relatives and neighbours. Store dried food, a propane stove and warm clothing. Plan for pooling resources with neighbours and establishing emergency neighbourhood accommodations and medical supplies including bandages and first-aid equipment and materials. Neighbourhoods should identify people with medical knowledge.

1.02 IS AN EARTHQUAKE IMMINENT?

The Association of Professional Engineers of B. C. prepared a brief to the provincial government which is available for distribution. In general, no one can predict with any degree of certainty when an earthquake will occur but, based on historical activity and scientific study, there is a virtual certainty that there will be earthquake activity. Scientists study the movements of tectonic plates along fault lines primarily located west of Vancouver Island and in Washington State and can detect small shifts. Forces can eventually build up until there is a release of energy resulting in earthquake shocks. While there is no proven method of predicting the severity of an earthquake, it is possible that there could be a violent event as forces along the tectonic plates continue to build up.

1.03 WILL COQUITLAM LAKE DAM BREAK CAUSING FLOODING?

In discussions with B. C. Hydro's Dam Safety Engineer, it was learned that the Coquitlam Dam has been upgraded, first in 1979 and most recently in 1985 to withstand a very violent earthquake event. B. C. Hydro is now reviewing the effectiveness of the renovations. The results should be forthcoming by the end of the year.

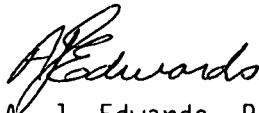
1.04 IS MY HOME SAFE?

Many earthquake experts expect most single-family frame homes to withstand even violent earthquakes. Fire and flooding is a risk from ruptured pipes. Objects in the home can injure occupants. Some simple precautions are contained in the Earthquake Brochure.

Specific technical advice about buildings requires inspection and analysis by a Structural Engineer experienced in these matters. There are two factors to consider when assessing the building: type of construction and the materials ability to withstand a major shock, and the foundation soils in which the structure is grounded. Advice as to the suitability of the soil in the building area is available from Geotechnical Engineers who specialize in foundation design. Costs for any investigations would be borne by the property owner.

1.05 WHAT IS THE INTENDED PURPOSE OF THIS BROCHURE?

The brochure was intended to raise the important issue of preparedness for the unexpected. A brochure format was chosen so the information could be retained. The cost was \$7,600.00. If the brochure helps one percent of the population to prepare for an earthquake or other disaster, and thereby reduce casualties and damage, then the brochure has paid for itself. It is, in other words, a good investment of public money.



A. J. Edwards, P. Eng.
Emergency Planning Coordinator

AJE/pin

cc: Emergency Committee

DISTRICT OF COQUITLAM

Inter-Office Communication

TO: J.L. Tonn, Municipal Manager DEPARTMENT: Administration DATE: 1989 May 11
 FROM: A.J. Edwards DEPARTMENT: Engineering YOUR FILE:
 SUBJECT: Status Report: Provincial Emergency Program Plan OUR FILE: 01 12 01

FOR EMERGENCY COMMITTEE1.00 BACKGROUND

- 1.01 At the conclusion of the 1989 B.C. Crisis Management Seminar on Earthquake Preparedness, (April 18-20, 1989) staff from the Provincial Emergency Program and Emergency Preparedness Canada developed some guidelines for preparedness. The following is a reprint of their approach:

Public Awareness:

The Province will take the lead in developing a comprehensive Public Awareness Program to address:

- First Responders Training
- Public Education
- Public Warning Information

Plan Components

The Provincial Disaster Plan with Earthquake Annex in support of local plans to be promulgated by the end of 1989 coordinated with Regional Emergency Planning Committees. Model for components - the functional methodology of Emergency Support Function of the National Plan.

Building Safety

The Provincial Seismic Safety Sub-Committee to make recommendations in respect to building codes, prioritizing buildings, evacuation retrofitting and enforcement. Make cognisance of the Brief to Government by the Association of Professional Engineers of B.C.

Urban Search & Rescue (USAR)

1. Federal Government to address Standards, Train the Trainers, Research and Development and funding.
2. The Province to take lead in developing a USAR program.
3. Municipalities: to address the structure, organization, manpower requirements and communication.

- 1.02 Local co-ordinators have expressed full support of the endeavour.

For Information.

A.J. Edwards

A.J. Edwards, P. Eng.
 Emergency Planning Co-ordinator

AJE:sh

DISTRICT OF COQUITLAM


Inter-Office Communication

TO: J.L. Tonn, Municipal Manager DEPARTMENT: Administration DATE: 1989 May 11
FROM: A. J. Edwards DEPARTMENT: Engineering YOUR FILE:
SUBJECT: Traffic Movement During Emergencies OUR FILE: 01 12 01

FOR EMERGENCY COMMITTEE1.00 BACKGROUND

- 1.01 Traffic control during major emergencies can be very problematic. A quote from an American rescuer sent to Armenia:
- "During the team's stay, the city (Leninakaln) went into gridlock every day at about eight in the morning because the Soviet troops were not controlling the traffic. Anybody who wanted to come in was coming in, so it would literally take us two to three hours to go a mile across town".
- 1.02 Clearly, a situation such as this is unacceptable and the traffic study is designed to develop a framework for effective traffic control during a major event.
- 1.03 Three consultants have been sent the attached Terms of Reference, namely; N.D. Lea, Hamilton and Associates, and Delcan. Proposals are to be received June 9th with study completion expected by October 31, 1989.
- 1.04 The cost of the study will be less than \$7,500 and these monies were approved in the budget, account number 225100-200.

For Information


A.J. Edwards, P. Eng.
Emergency Planning Co-ordinator

AJE:sh

TERMS OF REFERENCE

REQUEST FOR PROPOSALS

TRAFFIC CONTROL DURING EMERGENCY

The District of Coquitlam requires a transportation professional to prepare contingency plans for transportation route management in Coquitlam during transport related or area wide emergencies.

A major disruption to accustomed travel routes, access of emergency vehicles and the convergence' effect surrounding disaster sites must be anticipated and an action plan devised to reroute or exclude traffic flows. Traffic congestion can seriously affect an emergency response so "life-line" protected routes for fire, police, ambulance environmental and repair teams must be selected. During the Armenian earthquake U.S. teams reported that it took hours to reach destinations. Movement analysis will have to consider entry as well as exit from affected areas.

The study should recognize the typical traffic flow patterns experienced in Coquitlam during normal conditions. Traffic count and modelling information is available from the Traffic Section of the Engineering Department.

The study should include consideration of 'dangerous goods' incidents on provincial highway and major municipal roads:

- . Lougheed Highway, Barnet, Highway 401;
- . Major municipal roads: Brunette Avenue, Austin Avenue, Como Lake Avenue, Mariner Way, Guildford Way, Pinetree Way, Blue Mountain Street, North Road, Clarke Road.

The study should establish detailed instructions for configurations of barriers, signs, advisory messages to direct traffic to appropriate routes.

Proposals should be submitted by 16:30 h, Tuesday, 1989 June 09 and should include information on proposed study team, and company credentials. Work should be completed by no later than October 31, 1989 and the proposal should contain a schedule to complete the study. Contact person is Tony Edwards, the Emergency Planning Co-ordinator for Coquitlam.

We look forward to receiving your proposal.

DISTRICT OF COQUITLAM

Inter-Office Communication

TO: J.L. Tonn, Municipal Manager DEPARTMENT: Administration DATE: 1989 May 11
FROM: A.J. Edwards DEPARTMENT: Engineering YOUR FILE:
SUBJECT: Review of Emergency Training OUR FILE: 01 12 01

FOR EMERGENCY COMMITTEE1.00 BACKGROUND

- 1.01 Council passed Resolution No. 1503 which supported the training schedule as shown on the attached report to the Emergency Committee on November 8, 1988.
- 1.02 In short, the schedule was impossible to follow it turned out because of the lack of space available at Arnprior.
- 1.03 Of the persons slated to go to Arnprior, Don Cunnings has a confirmed reservation for the Emergency Social Services Planning Course slated for October of this year. In addition, Bill Wiseman, the Communications Director, has been accepted to go to the Emergency Communications Course from May 29 - June 2. Alderman Kingsbury attended the Mayors and Elected Officials course from March 20-23. Also, several municipal representatives from the Fire and Permit and Licence Department together with the Emergency Planning Co-ordinator attended an Armenian Earthquake debriefing in Seattle on February 13th. Finally, the ESS Director and the Emergency Planning Co-ordinator attended a one day course at UBC on Emergency Planning for Municipalities on March 10th. Total cost of courses to date is \$433.56 of a total budget of \$1900.00.

2.00 DISCUSSION

- 2.01 While there has been some improvement, a pressing need still exists for training. Through the interview process, it was clear that training is required for, in order of priority:
- a) Permits and Licence Director and Staff and Firefighters for Heavy and Light Rescue in damaged buildings.
 - b) Emergency Information Director and staff for Media Control and Public Awareness.
 - c) Senior Administrative Staff for role co-ordination, line of succession, etc.

2.02 The Provincial Emergency Program training arm is moving to the Justice Building in Vancouver. The recently appointed training officer is Sam Mechbach and as yet, at the time of writing, I have not received a schedule of courses of the Provincial government. In discussion with Mr. Mechbach, a specific policy for attendance at Arnprior courses does not emerge. The plan appeared to be to rely upon Zone Managers to make recommendations and to select the successful candidates based upon their advice.

2.03 There is a need to do some internal training with respect to the Disaster Response Plan. This work should be done by the Emergency Planning Co-ordinator over the next few months in a series of sessions with the staffs of the Municipal Response Group Leaders.

3.00 CONCLUSIONS

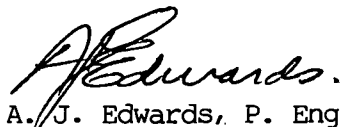
3.01 Without a specific plan from the Province and a definitive selection criteria, it is impossible to preschedule local training.

3.02 As training courses become available for the Information Director and Staff, the Permits and Licence Director and Staff, and Fire Department on heavy or light rescue and Senior Management appropriate staff should go, time permitting. A proposed schedule is attached.

4.00 RECOMMENDATION

4.01 That the Emergency Committee approve the proposed course loading for training municipal personnel and authorized applications.

For Information.



A. J. Edwards, P. Eng.
Emergency Planning Co-Ordinator

AJE:sh

Att.

DISTRICT OF COQUITLAM

Inter Office Memo

TO: J.L. Tonn DEPARTMENT: Administration DATE: 1988/11/02
 FROM: A.J. Edwards DEPARTMENT: Engineering FILE:
 SUBJECT: Nomination for Special Training, Disaster Response Plan OUR FILE: 01 12 04
 Municipal Staff

FOR THE EMERGENCY COMMITTEE OF COUNCIL

Reference A. Course Schedule: Emergency Preparedness Canada
 B. Course Schedule: Provincial Emergency Plan

1.00 BACKGROUND

- 1.01 If an affective emergency response is to be realized, key people in the organization must have a common training background. In 1987 and 1988, Doug Williams, Peter Gillis, Bill Low and Alderman Mae Reid attended Federal Emergency Response courses held in Arnprior, Ontario. I attended the EPC-Plans Operations, Peace course during October 3-7, 1988.
- 1.02 Federal Emergency Planning courses are fully paid by the Federal Government including transportation, lodging, meals and registration. The Municipality pays the employees salary during the week and minor incidental costs.
- 1.03 Reference A outlines courses for the period ending in the spring of 1989.
- 1.04 The Provincial Government has Emergency Planning courses available in various locations in British Columbia. Course content is intended to compliment the Arnprior courses. Reference B. outlines the Provincial courses to mid March.

2.00 PROPOSED CANDIDATES

- 2.01 The proposed schedule shows possible candidates who are Municipal employees:

Federal (Arnprior, Ontario)

<u>Date</u>	<u>Sponsor</u>	<u>Title</u>	<u>Candidate</u>
16-20 Jan/89	EPC	Plans and Operations Peace	J.L. Tonn

30 Jan- 3 Feb/89	EPC	Plans and Operations Peace	N.W. Nyberg
13-16 Feb/89	EPC	Mayors and Elected Municipal Officials	L. Sekora
20-24 Feb/89	EPC	Plans and Operations Peace	K. Wright
20-24 Feb/89	EPC/Health and Welfare Canada	Emergency Social Services Planning	D. Cunnings
27 Feb- 3 Mar/89	EPC	Emergency Public Information Group	D. Buchanan
20-23 Mar/89	EPC	Mayors and Elected Officials	D. White

2.02, After March when the new course outline is sent out, individuals from Fire, Police, Social Services and Communications should attend courses as well.

3.00 RECOMMENDATION

3.01 That the Emergency Committee approve the proposed course loading for training municipal personnel, and authorize applications.

3.02 That the Emergency Committee recommend to Council a training allowance for Emergency Operations of approximately \$1500 for incidental expenses in the 1988 Amended Annual Budget.



A.J. Edwards, P. Eng.
Emergency Planning Coordinator

AJE:sh

PROPOSED SCHEDULE FOR
FEDERAL COURSES AT ARNPRIOR

<u>DATE</u>	<u>SPONSOR</u>	<u>TITLE</u>	<u>NOMINEE</u>
When Available*	EPC	Mayors & Elected Municipal Officials	L. Sekora
When Available*	EPC	Plans & Operations Peace	J. Tonn
When Available*	EPC	Plans & Operations Peace	N. Nyberg
Oct. 16-20 (Confirmed)	EPC/Health & Welfare Canada	Emergency Social Services Planning	D. Cunnings
When Available*	EPC	Emergency Public Information	D. Buchanan
May 29-June 02 (Confirmed)	EPC	Emergency Communications	B. Wiseman
When Available*	EPC	Plans & Operations Peace	K. Wright

* possibilities are as per attached course schedule lists.

OTHER COURSES

When Available	FEMA (or other American Organization)	Heavy & Light Rescue	R. White R. Camporese Fire Personnel
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CANADIAN EMERGENCY PREPAREDNESS COLLEGE

COURSE CALENDAR

1 APRIL 1989 - 31 MARCH 1990

COURSE NAME: PLANS & OPERATIONS (PEACE)

COURSE NUMBER

COURSE DATES

1006	April 17-21, 1989
1013	May 1-5, 1989
1015	May 8-12, 1989
1028	June 12-16, 1989
1039	September 11-15, 1989
1047	October 2-6, 1989
1065	November 13-17, 1989
1074	December 4-8, 1989
1083	January 15-19, 1990
1089	January 29-February 2, 1990
1096	February 12-16, 1990
1103	February 26-March 2, 1990
1109	March 12-16, 1990

CANADIAN EMERGENCY PREPAREDNESS COLLEGE

COURSE CALENDAR

1 APRIL 1989 - 31 MARCH 1990

COURSE NAME: MAYORS & ELECTED MUNICIPAL OFFICIALS CONFERENCE

COURSE NUMBER

COURSE DATES

1005	April 17-20, 1989
1018	May 15-18, 1989
1022	May 29-June 1, 1989
1042	September 18-21, 1989
1055	October 23-26, 1989
1066	November 14-17, 1989
1085	January 22-25, 1990
1107	March 5-8, 1990

DISTRICT OF COQUITLAM

Inter-Office Communication

TO: Tony Edwards, Emergency Programme Coordinator
FROM: R. Munro
SUBJECT: ESS Quarterly Report from R. Munro, ESS Deputy Director No. 1

DEPARTMENT:
DEPARTMENT: Parks & Rec.

DATE: 89 04 17
YOUR FILE:
OUR FILE: 104.11

The following is a synoptical review of the activities undertaken by Park & Recreation Department staff in their Emergency Social Services (ESS) "Shadow Responsibilities" during the first quarter of 1989.

JANUARY '89

An ESS reception centre location plan - both primary and secondary - was developed and encompassed both the Cities of Port Coquitlam and Port Moody as well as special population centres and major churches throughout the subject area.

Park & Recreation staff were assigned to lead-role ESS management functions as shown on the attached designated ESS task assignment sheet.

Meetings were held with senior RCMP Coquitlam Detachment officers regarding the ESS reception centre plan and the evacuation plan for the Riverview Hospital and the Forensic Clinic.

Meetings were held with the Riverview Hospital Emergency Coordination group regarding the hospital's designation of Centennial High School as the primary emergency evacuation centre for the hospital (the Riverview group were asked to re-consider their basic assumptions regarding the use of Centennial High School).

The first Ministry-sponsored evening staff training workshop was held at the Coquitlam Motor Inn with representatives from Surrey, New Westminster, Coquitlam and Maple Ridge.

A "meet and greet" meeting was held with Dr. Monty Arnott, the new Medical Health Officer for the Simon Fraser Health Unit at which time the ESS evacuation reception centre plan was reviewed. Mr. T. Edwards, Emergency Program Coordinator, also attended this meeting.

A meeting regarding financial coordination responsibilities was held with Mrs. Shirley Gust of the B.C. Ministry of Social Services and Housing (Austin Avenue office).

A meeting was held with Mr. Rob Carson regarding the emergency use of schools as ESS reception centres and the problems facing Coquitlam's plan when the schools are totally occupied with students.

A meeting was held with Mr. Bill Melville, Principal of Centennial High School, and the Chairman of the Riverview Hospital Emergency Planning group regarding the hospital's designation of Centennial School as its primary emergency reception centre.

A second meeting was held with representatives of the Ministry of Social Services and Housing from the District of Coquitlam, the City of Port Coquitlam and the City of Port Moody regarding their financial services role during emergency evacuations.

FEBRUARY '89

A cold-weather ESS contingency plan was established involving special population centres in Coquitlam and Riverview Hospital.

Coquitlam was alerted by Riverview Hospital that all previously designated blankets for the District of Coquitlam's use were no longer available due to the effect of the cold weather spell on the ward patients.

A meeting was convened involving senior school board staff, the principal of Centennial School, the ESS Director and the Riverview Hospital Emergency Committee Chairman regarding the use of Coquitlam schools as a result of a hospital emergency at Riverview.

The No. 1 ESS Deputy attended a computer workshop on Emergency Planning held in the District of Coquitlam.

A meeting was held with the Principal of Maillard Jr. Secondary regarding the possible use of that school as an ESS centre.

The ESS Director was invited to address the School District Pro-D Day - involving all secondary and senior school principals - on the subject of Coquitlam's ESS evacuation plans and the schools' role.

A second Ministry of Social Services and Housing-sponsored ESS evening workshop was held in the Coquitlam Motor Inn with each of Coquitlam's lead role ESS staff attending with representation from other communities.

MARCH '89

The first School District/municipal ESS Committee meeting was convened at the School Board office with the following schools represented: (1) Maillard Jr. Secondary; (2) Centennial High School; (3) Board Office administration; (4) Banting Jr. Secondary; (5) Vanier Elementary; (6) Cedarbrook Elementary; (7) Hastings Jr. Secondary; and (8) Baker Drive Elementary.

The ESS Director and Mr. T. Edwards attended a presentation at UBC on the Edmonton tornado and secured valuable information - as well - on Richmond, B.C.'s ESS evacuation exercise.

The ESS Director conducted two table-top exercises with the School Board/Municipal ESS Committee dealing with evacuation of schools along the rail corridors passing through Coquitlam, Port Coquitlam and Port Moody with involvement from the City of Port Coquitlam and the City of Port Moody's emergency staff.

Coquitlam ESS staff attended a third evening workshop conducted by the Ministry of Social Services and Housing at the Best Western Hotel in Coquitlam at which time staff received specialized training in feeding, lodging and enquiry services.

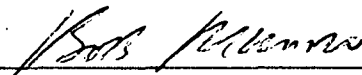
The ESS Director was invited by the Coquitlam Rotary Club to speak to that group during its lunch meeting and was successful in having the Coquitlam Rotary Club formally adopt the Como Lake High School Reception Centre as a club partial responsibility during an emergency evacuation requiring the use of Como Lake High School facilities.

A District of Coquitlam/Simon Fraser Health Unit staff task group was established to develop a plan for the evacuation of Coquitlam's special population groups into church reception centres.

The ESS Director was temporarily relieved of his "Shadow" ESS responsibilities by the Municipal Manager in order to allow pressing park and recreation tasks to be dealt with in a timely manner.

I trust that this synoptical report on the first quarter of activities in the Emergency Social Services area by staff within the Park & Recreation Department will be of some assistance to you in reporting to the Emergency Response Management group (politicians).

Mr. Cunnings has requested that I point out to you that the ESS section - in 1990 - ought to be appropriately funded in order to facilitate ESS signage requirements, ESS staff partial uniforming and ESS reception centre kits containing all of the necessary forms and clerical materials that would be required to activate a school or church as an ESS reception centre.



R. Munro
No. 1 ESS Deputy Director
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DESIGNATED EMERGENCY SOCIAL SERVICES ASSIGNMENTS

JANUARY 1989

Region	Title	Name	Street	City	Postal Code	Office Phone	Home Phone	
Coquitlam	ESS Director	Don L. Cunnings	633 Poirier St	Coquitlam BC	V3J 6A9	936-3481	939-3424	
	Deputy No. 1	Bob Munro	633 Poirier St	Coquitlam BC	V3J 6A9	936-3481	941-7478	
	ESS Deputy No. 2	Barry Elliott	633 Poirier St	Coquitlam BC	V3J 6A9	936-3481	931-3040	
	Financial Coordinator	Dave Jorssen	633 Poirier St	Coquitlam BC	V3J 6A9	936-3481	941-2764	
	Financial Coord Deputy No. 1	Margaret Brumpton	633 Poirier St	Coquitlam BC	V3J 6A9	936-3481	521-7445	
	Feeding Coordinator	Phil Blake	633 Poirier St	Coquitlam BC	V3J 6A9	936-3481	467-3348	
	Feeding Deputy No. 1	Beth Riddel	633 Poirier St	Coquitlam BC	V3J 6A9	936-3481	465-6169	
	Feeding Deputy No. 2	Mary Poirier	633 Poirier St	Coquitlam BC	V3J 6A9	936-3481	936-2003	
	Clothing Coordinator	Cheryl Gavin	633 Poirier St	Coquitlam BC	V3J 6A9	936-3481	931-6275	
	Lodging Coordinator	Stan Shigehiro	633 Poirier St	Coquitlam BC	V3J 6A9	936-3481	464-1377	
	Registration & Enquiry Coord	Jocelyne Shigehiro	633 Poirier St	Coquitlam BC	V3J 6A9	936-3481	464-1377	
	R & E Deputy No. 1	Barbara Nicholson	633 Poirier St	Coquitlam BC	V3J 6A9	936-3481	942-4515	
	R & E Deputy No. 2	Denise Funt	633 Poirier St	Coquitlam BC	V3J 6A9	936-3481	463-4351	
	Centennial School	Reception Centre Coordinator	Steve Borthwick	633 Poirier St	Coquitlam BC	V3J 6A9	936-3481	931-2207
		Reception Deputy No. 1	W. Wiederick	633 Poirier St	Coquitlam BC	V3J 6A9	936-3481	464-6663
	Como Lake Jr Sec	Reception Coord	Ric Graham	633 Poirier St	Coquitlam BC	V3J 6A9	936-3481	261-2633
		Reception Deputy No. 1	W. Cumings	633 Poirier St	Coquitlam BC	V3J 6A9	936-3481	524-0790
Charles Best Jr Sec	Reception Coord	D. Stevens	633 Poirier St	Coquitlam BC	V3J 6A9	936-3481	420-2123	
Montgomery Jr Sec	Reception Coord	Jill Rowledge	633 Poirier St	Coquitlam BC	V3J 6A9	936-3481	936-3346	
	Reception Deputy No. 1	Joan Fletcher	633 Poirier St	Coquitlam BC	V3J 6A9	936-3481	936-6815	
	Reception Deputy No. 2	Thelma Caddy	633 Poirier St	Coquitlam BC	V3J 6A9	936-3481	939-1521	
Sir Frederick								
Banting Jr Sec	Reception Coord	Tom Crawshaw	633 Poirier St	Coquitlam BC	V3J 6A9	936-3481	465-7030	
	Reception Deputy	S. Roulston	633 Poirier St	Coquitlam BC	V3J 6A9	936-3481	467-5671	
Poirier St								
Recreation Complex	Reception Coord	R. Munro	633 Poirier St	Coquitlam BC	V3J 6A9	936-3481	941-7478	
	Special Populations	Kathryn Wahamaa	633 Poirier St	Coquitlam BC	V3J 6A9	936-3481	522-6981	
	Personal Services Coord	Dr. Cob Johnston	633 Poirier St	Coquitlam BC	V3J 6A9	936-3481	936-7777	

SAMNA: ESS.LST