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Name and place: SYMPOSIUM ON ALASKA EARTHQUAKE 1964

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Notes: Original on ? inch reel.

The recording begins with a moderator, Charles Calb from the Army's Arctic Test Center talking about the conference about Alaska's earthquakes, how the podium works, and that nobody should throw their cigarette butts on the floor because it is flammable.

Charles introduces the subject by telling how on March 27th, an earthquake happened and turned Alaska into a natural laboratory for the study of earthquakes. In the conference they will have seismologists, oceanologists, and other scientist and they are going to talk about their findings concerning earthquakes. They hope to understand what happened on March 27th and what might happen in the future.

Then Charles introduces their first speaker, seismologist Dr. Ed Berg from University of Alaska's Geophysical Institute. His paper is "Alaskan Earthquake, its Location and Seismic Setting."

4:14 Dr. Berg thanks for the introduction and starts by telling that the shallow, widely spread earthquake was located north of the Prince William Sound which is at one of the seismically most active regions of the world. Berg describes the geography of the Pacific Belt.

In broad sense, the topography of Aleutian Arch and Oregon Panhandle are well known. [Explains the ocean topography and volcanic areas.] Earthquakes are associated with such structures [probably has a slide show], shallow ones being on the outside and deep ones more inland.

6:25 Alaska and Aleutians are particular in that they usually have only shallow earthquakes.

Dr. Berg has included Aleutian Arch in the Southeastern Alaska and British Colombia because he believes that they form one seismic region.

[Shows a map of earthquakes of certain size during past 60 years and lists some notable ones on the Aleutians and at Alaska's coast.]

9:00 They have earthquakes of magnitude 8-8.5 approximately every 10 years. Gutenberg and Trist [sp?] have found that they have about 2 shallow shocks per year.

The next question is how seismologists could predict the occurrence of the next large earthquake.

There are several methods for finding out if the ground is accumulating strain and the most reliable one is to make geodetic surveys every 5 years like they do in California.

People in California are afraid that the next earthquake is overdue and they are waiting for it.

11:03 If they don't have the precise measurements, they have other ways of making predictions. They can locate the epicenters in time and see how much energy was released. If they think they have sufficiently long time to accumulate energy, they can extrapolate and say that they are missing an earthquake.

[Talks about a slide with logarithm of scale and magnitude of earthquakes.]

13: 37 [A slide about data that is more complete, from 30 years of sampling.] The latter slide is almost the same than the first. The average energy release in an area from Aleutian Arc and Southeastern Alaska, going down to British Columbia is about 2.5 billion kilowatt hours per year.

14:59 [A slide about seismic activity in Alaska mainland.] The points don't fall nicely into a curve, which Berg thinks means that the area isn't a complete seismic region in which one could do that kind of sampling.

[Talking about a slide, earthquakes and their magnitudes.]

17:44 [Talking about another slide with a curve for central Alaskan region.] Berg thinks that the rate of energy release has changed after very large earthquakes.

Having the curves, they have at least 2 or 3 possibilities for answering the question about when the next earthquake will occur. The question of where it will occur is open for discussion. They would look for the distribution map that was in the first slide, look for the biggest gap, and see how close the two closest earthquakes have fallen in time.

19:20 From the average number of earthquakes a year, they can conclude that they'll have a magnitude 8.5 approximately every 31 years, magnitude 8 about every 10 years, magnitude 7.5 every 3 years. The speaker isn't saying that they occur every 3 years and there are big gaps. They are just average figures.

[Talking about a slide with graphic showing magnitudes of earthquakes.]

21:30 The figures of two big shocks, the one in 1938 out in the [Aleutian] Chain and one in 1964 up in Alaska, collate well. When they go to lower magnitudes than 8, the model doesn't work. There seems to be a gap between the bigger ones [earthquakes].

Berg says that he doesn't want to talk about strain release curve at all because he got the data late.

22:30 There are other methods for looking at physical phenomena that may occur prior to an earthquake. [Talks about crust accumulation, and tilt changes that in few cases have been investigated.]

Berg notices that he's out of time and concludes with talking about fault planes that contribute to tectonic pulses.

25:00 Good Friday earthquake, they couldn't determine which was the fault plane and which auxiliary one. [Talks more about the planes.]

[Talking about auxiliary circles in Yellowknife.]

[Talks about a visual presentation of a usual case of an earthquake.]

[End of the presentation.]

28:52 Charles Caleb [sp?] thanks Dr. Berg for the presentation and says that there's no time for questions. Their next paper is by William Cloud and John B. Townshend. William Cloud, who is the head of the seismological field survey of Coast and Geodetic Survey in California, will present it. Title of the paper is "Preliminary Intensity Evaluations of the Prince William's Sound Earthquake."

Mr. Cloud addresses the audience and says he'll start with talking about definition of density. Historically, it's a number that denotes the strength and violence of an earthquake. They use a modified Mercalli scale and at the lower level, earthquakes are barely felt, and damage starts at 7, level 12 being total damage. [More about the scale.]

31:40 Cloud will show an intensity map that's compiled by Mr. Thompson from various sources of data. Evaluation was sent to San Francisco where Mrs. Nina Scott [sp?] assessed the intensity ratings. Ratings should be consistent with other earthquake ratings, going back to 20 years.

33:14 [Talking about the map with different zones of damage, rated in Mercalli scale. The maps allow one to look at the whole earthquake and visualize what happened during it. For the purposes of engineering, however, one must see the actual data for details. [Unclear question.]

35:45 The difference between this scale [Mercalli] and magnitude scale is that it's based on phenomena observed whereas magnitude scale is based on motions that are recorded by an instrument.

In closing, the survey would like comments and suggestions for improvement on the scale. Cloud thanks the audience.

36:28 The chairperson thanks Mr. Cloud and asks for questions. [An unclear question.] The chairperson asks if all times were Greenwich Time, and the speakers say that they were.

Since there weren't additional questions or comments, the chairperson introduces the next paper by Mr. Wallace Bruder that is going to be presented by Dr. F.D. Aldermission [sp?], the chief data analyst for seismology division of Coast and Geodetic Survey in Washington. The title of the paper is "Earthquake changes Alaska Shoreline."

38:34 Dr. Aldermission starts by talking about the need to notify mariners of the changes that happen during an earthquake. They use radios, newspapers and chartlets to communicate the changes. Chartlet is a reproduction of a section of a standard nautical chart that shows the changes.

Chartlet procedure has been successful in previous instances and was implemented in Alaska too.

40:01 [Talking about different accuracies of chartlets.] Charts of increasing accuracy are printed as soon as practical.

Changes in Alaska's shoreline that were caused by the earthquake were caused by uplifting of earth, submarine landslides and tsunami waves.

41:28 First slide talks about tectonic uplift that affected at least 34,000 square miles in Southcentral Alaska.

At least 1/3 of the area east of the tectonic hinge that extends northeast from southeast coast of Kodiak Island though wester part of Prince William Sound was uplifted as much as 42 feet southwest of Montague Island.

Dr. Aldermission shows a slide of the uplift area that adversely affected navigable waterways, harbors and shorelines, and necessitated revisions to nautical charts.

42:46 Areas of substinance [sp?] includes most of the Kenai Preninsula and at least 2/3rds of the Kodiak Island. [Unclear talking from audience.]

44:22 Revision of nautical charts was one of the main concerns of U.S. Coast and Geodetic Survey. They wanted to ensure safe passage of ships. They flew over affected areas and surveyed the damage.

On April 4th, 8 days after the earthquake, aerial photographs were made of ports of Kodiak, Anchorage, Seward, Whittier, Valdez and Cordova. On April 21st, they had chartlets of the ports published. Copies were air mailed to coast and geodetic field offices on the coast of Alaska, and they also appeared in newspapers and in weekly notices to mariners. They quickly attempted to find routes to the ports that are vital to Alaska's economy. [Telling about the ships that aided in the survey.]

46:42 [Talking about a slide with a map.] The largest amount of uplift was observed around Montague Island, about 40-50 feet. [Talking about other uplifts.] The port of Valdez changed due to submarine landslides.

48:20 The town of Valdez is situated on an alluvial plane of unconsolidated sediments and it's on a steep side of the fjord from Port Valdez.

Shaking during the earthquake caused slides. [Showing photos and maps from before and after the earthquake.]

49:50 Examples of shoreline changes due to local tsunami waves are seen in Seward, Whittier, Valdez, and Kodiak. [Showing pictures and chartlets that show changes.]

51:45 [Talking about hydrographic surveys and a slide that shows typical track sounding lines and profiles in the Gulf of Alaska.]

There's a map of the area that's most severely affected by tectonic uplift and that will require long-range studies. They are trying to increase understanding of earthquakes to be some day able to predict their occurrence. [End of speech.]

The chairperson welcomes questions. [End of tape, a man's voice says that the reverse side of the tape is blank.]