

Answer Sheet

Based on the Sounds of a quake recording, estimate the MM intensity level:

About VII based on just the information in the recording. Many items knocked from shelves but no evidence of damage to the building.

Pictures of 1964 damage – for each photo, estimate the MMI and give your reasoning:

(1) Photo 1: The Five-story J.C. Penney Building, 5th Avenue and Downing Street, Anchorage, Alaska, partly collapsed by the March 28, 1964 earthquake. Note undamaged buildings nearby).

IX Threshold of structural damage in buildings designed to resist earthquake motion (like SF Bay Bridge). Significant structural damage to some well built wood frame buildings securely tied to foundations and modern engineered larger structures designed to resist strong ground motion. Many underground pipes break, major damage to reservoirs.

(2) Photo 3: Close-up of Government Hill Elementary School, which was destroyed by the Government Hill landslide. Anchorage, Alaska.

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(3) Photo 6: An uplifted dock on Hinchinbrook Island, Prince William Sound. Land in this area rose about 8 feet during the earthquake, and the dock can now be used only at extremely high tides.

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(4) Photo 11: The Hillside apartment building in Anchorage was severely damaged by the earthquake and has been razed. It was a split-level, five story building with steel posts and lintels, concrete floor slabs, and unreinforced concrete block walls and partitions.

Modified Mercalli Scale estimate _____

Reasoning for this estimate

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(5) Photo 12: One span of the "Million Dollar" truss-bridge of the former Copper River and Northwestern Railroad was dropped into the Copper River by the earthquake, and the other truss spans were shifted on their piers.

XI Severe damage to most well-built wood-frame buildings; supporting piers or pillars of large, well-built bridges are wrecked; major damage to many well-built structures.

(6) Photo 13: The earthquake shifted the steel trusses of the Copper River and Northwestern Railroad bridge near Round Island from 1 to 2 feet. This view shows one of the displaced trusses, which pounded against an adjacent steel girder span. The girder span was moved to the right, its concrete pedestal was rotated, and the girder span almost fell into the river. Note the shortening indicated by buckling of the guardrail.

X Severe damage to some well-built structures, some collapse. Widespread damage to underground pipes, railroad tracks likely to bend. Most masonry structures are destroyed

(7) Photo 14: The rails in this approach to a railroad bridge near the head of Turnagain Arm were torn from their ties and buckled laterally by channel ward movement of the river banks during the earthquake. The bridge was also compressed and developed a hump from vertical buckling.

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(8) Photo 15: Railroad trestle on the Kenai Peninsula southwest of Anchorage. The rails were buckled by lateral movement of the embankment fill toward an underlying culvert, which had collapsed.

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Write a summary describing what a person may see in the landscape after a large magnitude earthquake, and how that is numerically valued on the Modified Mercalli scale using your picture descriptions from the 1964 Alaska Earthquake, above.

Damage would likely be similar – in the intensity IX to X range