TENNANT CREEK EARTHQUAKE, 22 JANUARY 1988:
REPORT ON DAMAGE TO WATER RESOURCES INSTALLATIONS
A routine monitoring trip to the Tennant Creek borefield was made by D. Evans and R. Kneebone on 5 March, 1988.

Whilst monitoring the observation bores, the following observations were made regarding the effect of the Tennant Creek earthquake of 22 January, 1988 in that particular area.

Damage to Bench Marks

No obvious damage to Bench Marks except at bore RN 12145 (see map). The fault line passed right next to this bore. This particular B.M. had previously been disturbed at some stage by a vehicle and most probably would have shifted some more as a result of the quake.

Damage to Monitoring Bores

No obvious visual damage to any of the observation bores. Long term monitoring will probably determine whether any damage to the bores under the ground has occurred.

The L & S recorder on RN 10167 was found to have its float jammed in the bore casing. This was able to be rectified.

Damage to Production Bores

Could not see any visual damage to any of the production bores at this stage.

Changes in Water Levels

The accompanying graph plot illustrates the major changes to water levels, most noticeably in RN 12145 and RN 13458.

Additional information to accompany the above comments include.

(1) Earthquake Information Sheet, handed out to Tennant Creek residents.

(2) A map showing the approximate direction of the faultline in relation to the borefield.

(3) Photocopies of recorder charts showing rapid changes in S.W.L at the time of the earthquake.
(4) Graph plots of affected monitoring bores.

(5) General photos of the area
These photos are numbered on the back and their respective locations marked on the map.

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22 March 1988
The Tennant Creek area has been experiencing a series of earthquakes and tremors since about 10.00 am on Friday the 22 January 1988.

These earthquakes were caused by compressive forces acting on the earth. These forces resulted in a fault scarp appearing on the ground about 25 Kilometres to the south-west of Tennant Creek.

In seismic terms the earthquakes experienced this year are part of the series of quakes which occurred last year in the same area.

There have been three major quakes, all of which occurred on Friday 22 January 1988. The first, at about 10.00 am measured about 6.2 on the Richter Scale, the second which occurred at about 1.30 pm measured about 6.5 on the Richter Scale and the last which occurred at about 9.30 pm was about 7.0 on the Richter Scale.

There have been a number of minor quakes, many of them felt in the Tennant Creek area, which measure much less on the Richter Scale. These tremors can be expected to continue for some time, possibly months, gradually tailing off in intensity.

WHAT WE CAN EXPECT

A number of scientists who represent a number of organisations have come to the Tennant Creek area to study these earthquakes. In many ways the science of seismology is not a particularly exact one so these people are not able to make accurate, exact predictions of what we can expect. They are able to make predictions about the trends we can expect.

In summary, they say that the activity of tremors and small earthquakes will continue for some time. They say that the worst is most likely over, that we need not expect another major earthquake. We can expect a number of minor earthquakes and tremors over a long period, months or possibly years.

They also tell us that Tennant Creek fared very well in the quakes which have already occurred. The reasons for this are numerous and have something to do with the fact that Tennant Creek is built on hard rather than soft rocks. It was also helpful that Tennant Creek building codes provide for buildings that have characteristics which make them able to withstand earthquakes well. Finally, the direction from which the quakes came was such as to minimise the damage.

WHAT CAN BE DONE

The nature of earthquakes is such as to prevent authorities from preparing for an earthquake. Most preparation is already carried out years in advance of the quakes. Tennant Creek has a Local Counter Disaster Plan which is administered by the Local Counter Disaster Committee, made up of a number of people from Emergency Services and Government Departments. This Committee is chaired by the Local Controller who is the Officer in Charge of the Police Station. This Committee is backed up by the Regional Counter Disaster Committee which is representative of organisations on a larger scale, this Committee is chaired by the Regional Co-ordinator, the Police Divisional Inspector.
Finally these two Committees are backed up by the Territory Counter Disaster Committee, chaired by the Police Commissioner. Plans have been made at all levels to ensure that appropriate response is made to any emergency which may arise, including earthquakes. During the past week these people have met on a number of occasions and made plans and decisions relating to the response of various organisations to the earthquakes. All the appropriate organisations remain on alert, in case of further quakes, although the worst appear to have past.

WHAT YOU CAN DO

After the earthquake, check for damage in your immediate area. Should there be any damage, report it to the nearest Police Station. Please keep any telephone calls to a minimum. Emergency Services need to have free lines in order to do their job. After the first earthquake on Friday 22.1.88 the telephone exchange in Tennant Creek was 'locked-up' for over twenty minutes and Emergency Services were not able to contact each other by telephone.

SIGHTSEEING

The fault scarp southwest of town is the most obvious and fascinating result of the earthquakes. Unfortunately, it is also the most interesting area for the scientists. In order for them to supply the local Counter Disaster Controller with accurate information these people will need some peace and quiet for a few days yet. In addition the gas pipeline was placed under some stress as a result of the earthquakes, and whilst there is no danger to Tennant Creek, repair teams will require a clear area in which to work. As a result the area where the fault scarp occurs is closed to the public for the next few days. Even after this, you are reminded that the scarp occurs on private property, and the permission of the owner should be sought before entering.
TAKEN FROM 13005' KN 1214.5

105° WEST DIRECTION
Fault line at damaged gas line.
6th Eastern Point of Lake Surprise.
T/Creek West

Photo taken prior to round

East Direction.