= 1948 Tinker Air Force Base tornadoes =

The 1948 Tinker Air Force Base tornadoes were two tornadoes which struck Tinker Air Force Base in Oklahoma City , Oklahoma on March 20 and 25 , 1948 . Both tornadoes are estimated to have been equivalent to F3 in intensity on the modern Fujita scale of tornado intensity , which was not devised until 1971 . The March 20 tornado was the costliest tornado in Oklahoma history at the time . On March 25 , meteorologists at the base noticed the extreme similarity between the weather conditions of that day and March 20 , and later in the day issued a " tornado forecast " , which was verified when a tornado struck the base that evening . This was the first official tornado forecast , as well as the first successful tornado forecast , in recorded history .

= = March 20 tornado = =

Weather forecasting was still crude and prone to large errors in the era before weather satellites and computer modeling . Thunderstorms were not even in the forecast for the evening of March 20 . However , around 9 : 30 pm storms were reported about 20 miles (32 km) to the southwest , and at 9 : 52 a tornado was sighted near Will Rogers Airport 7 miles (11 km) away , along with a 92 @-@ mile @-@ per @-@ hour (148 km / h) wind gust , moving northeast towards the base .

At 10 : 00 , the tornado reached the southwest corner of the base . Illuminated by nearly constant lightning , the tornado was highly visible as it bisected the base , tossing around planes which were parked in the open . The control tower reported a 78 @-@ mile @-@ per @-@ hour (126 km / h) wind gust before the windows shattered , injuring several personnel with flying glass . The tornado dissipated at the northeast corner of the base .

The tornado missed most structures on the base , but the damage to expensive military aircraft was substantial . The total damage cost came to around $ 10 million , or $ 98 million in 2016 United States dollars . This was the most damaging tornado in Oklahoma up to that date .

= = Investigation and tornado forecast = =

In the aftermath of the first tornado , an official inquiry was conducted into the failure to predict the destructive tornado . Air Force investigators came to the conclusion that " due to the nature of the storm it was not forecastable given the present state of the art . " They also made recommendations that the meteorological community determine a tornado warning system for the public , as well as a protocol for protecting life and property at military bases .

Both of these investigations began almost immediately . In the days following the tornado , Tinker 's meteorologists Major Ernest J. Fawbush and Captain Robert C. Miller investigated surface and upper @-@ air weather data from this and past tornado outbreaks , hoping to be able to identify conditions which were favorable for tornadoes . By March 24 , they had compiled several possible tornado indicators , and decided it would be difficult , but possible , to identify large tornado threat areas in the future .

On the morning of March 25 , base meteorologists noticed that weather charts for the day were strikingly similar to those before the March 20 tornado . Forecasts issued by the Weather Bureau indicated that almost the same conditions would be present in the evening of March 25 as were present on March 20 . In the morning , they issued a forecast for " heavy thunderstorms " effective for 5 ? 6 pm that evening . This would allow the base 's commander to alert base personnel that they may institute their brand @-@ new tornado precautions .

As the day wore on , conditions appeared more and more favorable for thunderstorms , and more and more similar to the events of March 20 . Weather radar images showed a severe squall line had formed to the west , and weather stations to the west reported cumulonimbus clouds and thunderstorms . In an afternoon meeting , under some pressure from their commanding officer , base meteorologists composed and issued the first official tornado forecast . Although they were aware of the small chance of success , they felt they had no choice , since the conditions were so similar to March 20 . Equipment which could be was moved to bomb @-@ proof shelters , and base

personnel were moved to safer areas .

= = March 25th tornado = =

Although storms were relatively benign up to the point where they reached Tinker , a supercell formed just west of the base , and at around 6 pm a tornado touched down on the base for the second time in six days . This second tornado caused $ 6 million in damage , or $ 59 million in 2016 dollars . However , due to precautions enacted because of the tornado forecast , no injuries were reported , and damage totals could have been much higher .

= = Legacy = =

The tornado prediction proved to be successful , even if its precision was mostly due to chance . Before this point , the Weather Bureau had a policy against issuing tornado warnings , mainly due to fear of panic by the public , and subsequent complacency if forecasts turned out to be false alarms .
Due to lives and costs saved , Fawbush and Miller continued their tornado forecasts , which verified at quite a high rate over the next three years . At first , they kept their forecasts secret . In the spring and summer of 1949 , they issued eighteen forecasts for tornadoes within a 100 @-@ square @-@ mile (260 km2) ? area , and all eighteen proved successful . In the subsequent years , while not explicitly using the word " tornado " , the Weather Bureau used the pair 's forecasts to predict " severe local storms " .
The synoptic pattern which occurred on March 25 later became known as the " Miller type @-@ B " pattern and is recognized as one of the most potent severe weather setups .