From Barry Clark to ANATAC, July 15 2004,
on Cloudsat burnout risk on ALMA receivers:

The burnout risk calculation goes about as follows:

Say the radar paints two 5km wide stripes down the earth every 90 minutes.
This is 1/4000 of the near-equitorial earth every orbit, .004 of the earth
every day. If these are random (the calculation is much the same if they
aren't, but it sounds more convincing this way), a randomly located
antenna expects 1.5 illuminations per year. The motion of the satelite
while it is illuminating the antenna will be about 25 arcminutes as viewed
from the antenna. So if the antenna is looking within half an arcminute
of that 25' track at that time, the receiver will be toast. If we assume
that an antenna has a uniform probability of pointing anywhere in the
10000 sq degrees above 30d el (rather a worst case; people will tend to
avoid the zenith because of gimbal lock problems), there is a 7*10^-7 chance
of burnout per illumination. So the expected lifetime due to radar burnout
is just under a million years, and the expected time before the first burnout
for the 64 element ALMA is 15,000 years.

If this were going to kill somebody, this would be a serious matter.
For mere property damage, amortizing the cost of the destroyed receivers
over 1,000,000 years would indicate that we should spend about $0.15 per
year worrying about the problem. The do-nothing option is quite supportable.
But I'd incline to be a little more agressive, and request an e-mail
notification, a few days in advance, anytime we are going to be illuminated,
and consider later whether we would do anything about it.

From Barry Clark to ANATAC on July 15, on the
practicality of ALMA actively avoiding pointing its main
beam at the active radar satellite:

I don't think Harvey's goal of not pointing the main beam at the satelite
is very practical for ALMA. The 10km uncertainty will mean the zone of
avoidance would be a streak right across the sky a degree and a half wide
for any antenna, twice that wide if you are in a big array. That's enough
solid angle that it's a pain to avoid. In the big arrays, the effect
is further mitigated by the fact that the thing is only in the main beam
of one or two antennas at a time.

I don't think ALMA real-time software will get well enough organized to
avoid this swath before the scheduled Feb 2007 end of mission.

If the three seconds of data clobbered by Cloudsat in beam is really
going to affect things, it shouldn't be too hard to find and flag it,

either by hand or authomatically. (ALMA in Cloudsat beam could be done the same way, but it could also be handled by saying "flag these ten seconds", all antennas, without much effort.)

I'm inclined to worry only about the damage scenario, which is really easily handled by saying "keep the antennas away from zenith at 1:40 local time". (Anybody remember what the stow position is for VLBA? if it's 90d exactly, we should change it.)