MABELI (Main Beam TIVOLI)

1. Chart number one shows the significant intelligence information desired about Soviet ABM radars. The chart also shows the importance of the information and the specific ELINT required to obtain the information.

2. Chart number two attempts to show three things: (1) where do specific gaps exist in Soviet ABM radar knowledge, (2) what information can MABELI provide about ABM radars, and (3) what unique knowledge can MABELI contribute about ABM radars. I say "attempts to show" because many judgments had to be qualitative, not quantitative.

3. The significant items from the second chart are as follows:

a. MABELI will collect unique ABM intelligence data which other ELINT collectors cannot obtain. These data are:

TRY ADD SCAN - We know virtually nothing about the TRY ADD scan. MABELI will be uniquely qualified to collect this data because of its precision, absolute power measurement, its signal recognition, and its large dynamic range. The payload dynamic range is not unique, but the digitization of the power information (thus circumventing the limited recorder dynamic range) is unique. [redacted] as precisely as MABELI. 25X1

ALL RADAR SIDELOBE POWER & PATTERN - Again because of [redacted]

HEN HOUSE VERTICAL AND BUGH HORIZONTAL SCAN AND BEAMWIDTH - Very little is known about any of these because on a single pass a satellite does not see a significant variation in these parameters. This is because these antennas scan, and have their best resolution, in the other dimension (horizontal for HEN HOUSE and vertical for the BUGH). Further complicating HEN HOUSE collection is the fact that the rate of change of elevation is slow compared to the rate of change of azimuth on most satellite passes. BUGH collection is complicated by the fact that the BUGH operates infrequently. The absolute power measurements from MABELI will allow data to be correlated from rev to rev. This cannot presently be done because of uncertainties in absolute power measurements from existing satellite collectors.

ALL RADAR PRECISE MAINBEAM POWER - No other system does this.

Chart # 1. SIGNIFICANT ABM RADAR INTELLIGENCE INFORMATION

25X1

RADAR SYSTEM CAPABILITY	COUNTERMEASURE SIGNIFICANCE	COMMENTS
Sector Coverage (AZ & EL)	Penetration (AZ & EL)	Requires good payload dynamic range, and data must be correlated with satellite trajectory information. POPPY can generally provide this data.
Range	Deploy decoys, Chaff warning and target tracking time	Radiated power is the only real indicator of maximum possible range, although PRI and any pulse coding would indicate unambiguous range. Estimates have also been made based upon observation of the radar tracking a known target (for example, 25X1 25X1
Resolution AZ & EL Range	System target vector determination Target discrimination (RV from Decoy)	Requires good payload dynamic range, and data must be correlated with satellite trajectory information.
Maximum Target Capacity	Saturation	Same as above.
Sampling Rate	System target vector determination	Same as above.
ECM Vulnerability	Active ECM (jamming, spoofing)	See Comments under Resolution. The dynamic range is especially critical for accurate sidelobe power measurements.

○ % KNOWN UNIQUE MAYBELI NON UNIQUE MABELI

Chart # 2. INTELLIGENCE GAPS AND MABELI CAPABILITY

	TRY ADD	HEN ROOST	DOG HOUSE	BUSH	HEN HOUSE
AN ELEVATION					
AZIMUTH					
PHWIDTH ELEVATION					
AZIMUTH					
P WER MAINBEAM					
SIDELOBE					
LARIZATION					
ODING	NONE SEEN	NONE SEEN	NONE SEEN POSSIBLE FOR SHORT BEAM		
RI, PW		NA	NA		
REQUENCY					

ALL RADAR POLARIZATION - No other low altitude system does this. [redacted] 25X1
25X1

b. MABELI is similar to the CONVOY payloads (specific target coverage, target recognizers, and frequency tracking capability) and will provide "CONVOY-type" mainbeam data which CONVOY technically could have collected but didn't either because the particular target hadn't begun operation yet or because CONVOY was never in the right place at the right time to see the desired activity. Specific cases for this are: HEN ROOST, DOG HOUSE SHORT SCAN, BUGH, SEVASTOPOL (and other new) HEN HOUSE.

c. MABELI will do a good job of augmenting existing collectors. Expressed alternately, there is very little mainbeam information which can now be collected by other satellites which MABELI can't collect. This is because MABELI has a:

(1) 1 MHz recorder (like TIVOLI, but not as good as STRAWMAN)

(2) 60 db dynamic range (like CONVOY)

(3) target recognizers (like STRAWMAN)

(4) precise, absolute power measurement capability (never done)

(5) polarization measurement capability (never done, although [redacted] 25X1

[redacted] 25X1

5. Recommend approval of MABELI.