

OUTGOING  
NRL SPECIAL PROJECTS CONTROL NUMBER

BYE-61726-92

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SUBJECT	! DISTRIBUTION INFO
CS FOLDER W/P <input type="checkbox"/> CONTRIB	!
OF POPPY PROG	!

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Donald Z. Bitt 10/15/97

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NRL OUTGOING DOCUMENT



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Contribution of POPPY Program

1. The HEN HOUSE signal was first seen <sup>reflected</sup> (from a nuclear cloud in late 1963) by peripheral ground stations and was seen by POPPY 7103 about 6 months later. POPPY contributed to the basic knowledge of this signal by defining the sector of antenna scan and by disclosing the wide-band modulation on the pulse of the BVFW signal. These contributions have not been widely publicized but are contained in informal NSA statements.

3. DOG HOUSE, a 10 pps cw type signal in the 380 to 440 Mc band which was first seen by any platform on 28 June<sup>67</sup> just 2 days after 7105 was placed in operational status. NSA did not announce POPPY success until March 1968 after a wide distribution of the FACADE (7321) intercept on 2 November 1967. Considerable damage to POPPY technical image has been done by waiting nearly 8½ months to tell this competitive community of our success against this signal. NSA's defense is that the signal was usually obscured by a [ ] and they had low confidence until they built up a library file on the signal. [ ] does not normally afford this luxury.

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Three days later on 22 December the 7105 C/D satellites were tracked from an emitter-elevation-angle of about  $7.9^{\circ}$  down to the horizon for a period of over 5 minutes. This intercept was monitored by [ ] and a message alerting NSA, was sent. The race was on between the FACADE data being processed in a West Coast contractor analysis shop and the POPPY analysis effort at NSA. Due to a temporary alignment problem in the recording of the original digital tape in [ ] it failed to be usable both at NSA and on a system at HRB Singer. The backup analog (FM) recording made in [ ] was all right and provided NSA with the data which led to the first published report on [ ] The location was made by DOPPLER analysis and had a [ ] 95% confidence ellipse.

Several weeks later the [ ] tape came to the surface at NSA and a second doppler location fix was made to a [ ] 95% confidence ellipse obtained.

The third occasion where the POPPY community saw this signal data was again observed on 2 February at [ ] As the attached message indicates the site was helpless to perform analysis until they obtained ephemeris data on 20 February. Their reported location on this high quality interest was then performed in less than 2 working days. The accuracy of this on site "fix" was reported by NSA to be extremely good but without an ellipse of 95% confidence so <sup>NSA</sup> they would not publish it. The significant points are:



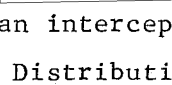
- (a) Site performed "fix" computation in 2 days.
- (b) Site response limited by lack of timely ephemeris.
- (c) NSA pulled out all stops to get their location analysis both quickly and as accurately as possible...
  - (1) Resulted in [ ] confidence ellipse (95%)
  - (2) NSA used system calibration unit for the first time to improve the accuracy.
  - (3) NSA still took 10 days longer than the site to make their analysis

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5. What remains in  quest?
- a. 
- b. 
6. How can intercept be enhanced?
- a. Distribution of "unknown file" held by NSA analysts so that all of the community can impinge on this prolific source of "pay dirt"
- b. Encourage STIC to provide the stimulant to NSA analysis which they have so capably done in the past.
- c. Encourage site to provide special location analysis for which they are now capable.
- d. Get the hot-signal analysis coupled back to 1payload design people who can best interpret the payload aspects of the signal intercepts. They can often solve problems which have plagued the analyst for months.

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