Memos to/from Ray and John

June 8, 2008

Ray,

The CIA's error was intentional.
The most important issue on appeal is fraud.

The disclosure of which redactions in the packet would best prove fraud?

My guess is that it's No. 5, about which you wrote:

> Pages 41-50 contain 10 pages of mostly blank boxes. This is representative of the non-cooperative attitude of the CIA. The tantalizing titles on many of the boxes suggest that this is exactly the type of information that we are seeking.

June 5, 2008

Hello John – Here is our basic response regarding the CIA Production:

Thousands of eyewitnesses saw TWA800 explode and fall into the ocean. This includes three airline crews and a National Guard crew. About two hundred of the eyewitnesses saw a bright object streak towards TWA800 prior to the initial explosion. The logical conclusion is that a missile initiated the fuel tank explosion of TWA800. However, that wasn't a politically acceptable conclusion.

The CIA is not noted for aviation accident investigation expertise, and it has no authority from Congress to play the lead role in the determination of cause. Congress gave that authority to the NTSB. As soon as the FBI and the CIA made a determination that criminality was not involved, those agencies should have turned over the physical evidence that they had gathered, and they should have withdrawn from the investigation.

Instead, a single CIA agent was sitting before his computer, and he was seeking an explanation for the rising bright object seen by the eyewitnesses. In a moment of inspiration, this agent hypothesized that the object was TWA800 itself rising in an almost vertical climb trailing flames. The scenario wasn't plausible. In fact, it was aerodynamically impossible to fit such a zoom-climb into all of the other evidence. But it was the only option they had in order to steer the investigation from a missile to a mechanical failure, a conclusion that was politically acceptable.

From that moment on, instead of following the evidence to its logical conclusion, the zoom-climb conclusion was adopted and the evidence was made to fit that

conclusion. Where the evidence simply didn't fit that conclusion, that evidence was withheld. The eyewitnesses were declared to be mistaken, and not a single eyewitness was allowed to refute this declaration by testifying at the public hearings. Ignoring eyewitnesses is unprecedented, and withholding evidence borders on criminality. My focus is on one small portion of the withheld evidence, namely, the data and calculations used for the impossible zoom-climb.

In response to a court order, the CIA has released a new packet of information. As with the previous information released by the CIA, it provides no means of verifying the assumptions, the data, and the calculations used by the CIA to produce its video animation of the zoom-climb. Somewhere, the CIA has made a gross error, and the CIA seems determined to keep it hidden. Presenting a conclusion without presenting the evidence violates the basic precept of accident investigation and jurisprudent procedure.

1. This 130 page packet contains nine sections. The first section refers to Mori DocID 1255554-A approved for release in May, 2008 (the original Mori DocID 1255554 was approved for release in October, 2005). This document attempts to discount the eyewitnesses on the basis of a zoom-climb, but it does not present any evidence about how such a zoom-climb could have been possible.

2. Pages 11 & 12 are labeled "Program to Analyze x,y Data from Radars". This is **not a program**. This is the very limited results of a program that transforms radar range and azimuth coordinates to x,y coordinates. It is not difficult to write such a program. The important thing is to release all of the raw radar data from all of the radars that tracked TWA800 so that these results can either be verified or disproved.

Pages 13 – 22 are hypothetical performance charts. Each chart represents data and a formula probably entered into a computer, although they could have been generated by hand. These charts are meaningless without the data and formulas. Furthermore, they represent a performance that was aerodynamically impossible. Where are the data and formulas that went into these charts?

3. Page 23 is an important page. It acknowledges the range of speculation and the huge discrepancies between assumptions made by the CIA and Boeing. In order to hypothesize a zoom-climb, both the CIA and Boeing had to make unrealistic assumptions about the noseless aircraft. Both the CIA and Boeing refuse to release the assumptions that went into their calculations. Both had to assume that the aircraft remained symmetrically balanced, gravitationally balanced, control surface balanced, and engine power balanced in order continue to fly. None of these assumptions are realistic. The good eyewitnesses saw the major parts of the aircraft fall downwards out of the initial explosion in two flaming streams.

4. Pages 25 – 39 comprise Mori DocID 1215200-A. They are certainly more extensive than the six pages in the original MoriDoc 1215200. However, they still share the same basic fault, namely, no input data and no formulas. There is no way to verify or disprove these claimed results.

5. Pages 41-50 contain 10 pages of mostly blank boxes. This is representative of the non-cooperative attitude of the CIA. The tantalizing titles on many of the boxes suggest that this is exactly the type of information that we are seeking.

6. Pages 51 – 67 are another 17 pages of mostly blank boxes. However, the radar hits on page 67 are useful and hopefully can be checked against the portion of radar data that has been previously released.

7. Pages 69 – 90 start off with the "view from the bridge". This refers to the view described by Michael Wire, the millwright who was working on the bridge. His description featured prominently in the CIA video. Michael Wire flatly rejects that CIA representation of his testimony. There was no zoom-climb observed from the bridge. Once again, there was no data or formulas provided to verify or disprove the conclusions represented on the charts that followed Michael Wire's description.

8. Pages 92 -119 and Pages 122 – 128 appear to be the results of a computer run. Now if we could just get the data and formulas used for this run, we could probably find where they made their mistake or false assumption.

9. Page 130 was denied in full on the first release. This time we are provided a preliminary run to show the variation due to thrust. There seems to be an implicit assumption that the engine thrust remained balanced across all four engines, even though the location of the engines in the debris field was widely scattered. That indicates that engine thrust did not remain balanced. If one or more engines quit before the others, there would have been a violent yaw that would immediately have upset the aircraft since there was no cockpit and there was no way to introduce control inputs which might counteract the yaw.

In summary, the CIA acknowledges that the zoom-climb was conceived in an attempt to explain the rising bright streak observed by about 200 eyewitnesses. However, the CIA refuses to reveal the data and calculations used to support that conception. Once again, presenting a conclusion without presenting the evidence violates the basic precept of accident investigation and jurisprudent procedure.

	5-13-08 Production Pages	Pl Rec No	Pl Vol & Bates pages	MORI Number	Alternate MORI Number	Number of Pages
1	4-9	**12**	**III at 692-697**	**1255554**—A	1186298	6
2	11-21	**56**	**IV at 891-893**	**1305302**—A	1147390	11
3	23	**13**	**III at 700**	**1215017**—A	1186300	1
4	25-39	**45**	**III at 808-813**	**1215200**-A	1147343	15
5	41-50	**27**	**III at 733-734**	**1215195**-A	1147320	10
6	51-67	**28**	**III at 735-736**	**1215194**-A	1147319	17
7	69-90	**29**	**III at 737-738**	**1215196**-A	1147321	22
8	92-119	**32**	**III at 741-768**	**1215202**-A;	1147405	27
	122-128	**32**	**Same as above**	**1215202**-B		7
9	130	**46**	**III at 814**	**1215209**-A	1147407	1

Central Intelligence Agency

Washington, D.C. 20505

13 May 2008

John H. Clarke, Esq.
2424 Pennsylvania Ave., NW
Washington, D.C. 20037

Reference: F-2004-00078

Dear Mr. Clarke:

This letter concerns the 8 October 2003 Freedom of Information Act (FOIA) request and subsequent litigation on behalf of your client, Captain H. Ray Lahr. (H. Ray Lahr v. National Transportation Safety Board and Central Intelligence Agency, Civil Action No. 03CV08023-AHM (RZx)(C.D. Cal.).

Enclosed are seven documents that may be released in segregable form with deletions made on the basis of FOIA exemptions (b)(3), (b)(5), (b)(6), and (b)(7)(c), and two documents that may be released in their entirety. (Information previously withheld pursuant to (b)(4) is being released pursuant to court order.) Please note that one document--MORI 1215202-- consists of two parts A and B.

Sincerely,

Delores M. Nelson
Information and Privacy Coordinator

Enclosures

MORI Number	Alternate MORI Number
1255554–A	1186298
1305302–A	1147390
1215017–A	1186300
1215200-A	1147343
1215195-A	1147320
1215194-A	1147319
1215196-A	1147321
1215202-A; 1215202-B	1147405
1215209-A	1147407

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(b) (3)

NOTE FOR: [redacted]
FROM: (b) (6) (b) (7) (c)
DATE: 04-29-97 01:18:35 PM
SUBJECT: Summary: FBI's [redacted] Critique of TWA-800 Analysis (b) (6) (b) (7) (c)

It is important to note that of the two FBI agents assigned to the FBI's 'missile team', [redacted] is completely convinced and satisfied with our analysis and conclusions and [redacted] although not himself believing a missile was necessarily employed to take down TWA-800, has concerns over our analysis. All the points documented in his critique sent to us as well as the summary below have been discussed at length with him during a murder board of the Agency's analysis two weeks ago on April 16, 1997. A summary of our responses will be provided at the end of [redacted] concerns. (b) (6) (b) (7) (c) (b) (6) (b) (7) (c)

Summary of FBI's [redacted] Critique of CIA's TWA-800 Analysis:

Areas of Concern:

(b) (6) (b) (7) (c) *1) Witness [redacted] was the initial witness from which CIA speculated that the aircraft may pitch up and rise shortly after the initial explosion. A re-interview of [redacted] has witness reporting a slight east to west motion of projectile at almost vertical ascent, which is opposite of expected west to east motion for initial trajectory of aircraft after initial explosion.* (b) (6) (b) (7) (c)

CIA response:

(b) (6) (b) (7) (c) Although witness [redacted] report was the initial cue which led the CIA to examine the possibility that the aircraft pitched up and gained altitude shortly after the initial explosion, this belief is now further supported by; a) NTSB analysis of structural sequencing (that is modeling of how the aircraft came apart based on where debris was found on the ocean floor) showing the front third of the aircraft left the remainder of the aircraft and wings 2-4 sec after the initial explosion. Aerodynamics would suggest that this loss of mass in the front, with wings still creating lift, would cause the aircraft to pitch up and climb with still operating engines. In conversations with [redacted] Boeing analysts have no problems with the aircraft pitching up and rising in altitude, should the aircraft begin to come apart in the manner discussed above. Nonetheless this assumption of upward aircraft motion just after the initial explosion deals with less than 10 % of all the witnesses examined as over 90 % see a portion of the aircraft's trajectory closer to the end of the entire event. (b) (3)

(b) (6) (b) (7) (c) *2) Witness [redacted] on USAir flight, 8,000 ft above TWA-800, subject to 'relative velocity" observations, was in no position to judge upward or downward motion flight 800, [redacted] does not describe relative motions consistent with TWA-800's direction of motion.* (b) (6) (b) (7) (c) *[redacted] is not the 'ideal' or template witness.* (b) (6) (b) (7) (c)

CIA response:

(b) (6) (b) (7) (c) Witness [redacted] reported that he thought the object which he saw was ascending but that he could not be sure. Analysis of where TWA-800 was in respect to the USAir flight [redacted] was on at the time of the initial explosion shows that he had to have seen close to the initial portion of the event after the first explosion on flight 800. The object he describes could not have been a potential missile unless its trajectory was directly aft of flight 800's path. This trajectory does not correspond to other witness reports and flight 800's path is consistent with the direction of motion described by [redacted] in a second interview. [redacted] is only one witness of over 200 examined by CIA analysts to analyze and determine what the witnesses could have seen and when. He was used only as an example for briefing purposes of one of the best and closest to the aircraft at the time of the initial explosion. Many others exist consistent with his reported information. (b) (6) (b) (7) (c) (b) (6) (b) (7) (c)

3) Concerns that the initial "pitch up" must be consistent with the same principles which would stop the "pitch up". The trajectory must also be consistent with continued motion downrange with apparent directional stability and increasing

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downrange distance (from radar data). If a "pitch up" and ensuing instability are not consistent with what has been determined to date by radar, witness statements, and aerodynamics, then the analysis could be left with its original problem, what do people see ascend?

CIA response:

What happens to the aircraft after the initial pitch up and corresponding aircraft instability in pitch does not affect the results of CIA analysis at all. The aircraft can match radar data points with an initial pitch up which is all that is necessary in order to show a feasible, hypothetical trajectory. All that is necessary to explain in the initial portion of the aircraft's crippled flight is the beginning pitch up and ascending motion. Whatever happens after these first several seconds is not understood by CIA and would require extensive modeling of the aircraft beyond the CIA capabilities. CIA does not attempt to model this portion of the trajectory and only relies on determining 4 key points in the trajectory; 1) the initial upward pitch up and ascent, 2) a rough time position of the aircraft's apex of ascent, 3) the point at which the aircraft's left wing separated from the fuselage near the end of the flight, and 4) the approximate time at which the main fuselage hits the water. Again, modeling the exact second by second trajectory of flight 800's demise is not necessary for CIA to reach its conclusions. We question whether such a model could be created at all.

4) Claiming that a majority of witnesses observing something ascend just prior to an explosion are not witnessing the entire event and only the end (and thus could not see a missile) are based on one of three things:

a) Witness descriptions of the entire observed event occurring in a few up to about 20 sec. How could something which is known to have taken about 50 sec have been reported by many witnesses as only taking a few to about 20 sec?

b) Lack of descriptive narrative for a period of observation - an injured flight 800 at 17,000 ft down to 5-6,000 ft in about 25 sec.

c) 5 Separate witness observations whose lines of bearing to what they observed 'ascend' as plotted by [redacted] *are more consistent with observing something rise closer to the end as opposed to the aircraft at the initial explosion. This is not consistent with the Initial Agency projected rise of the aircraft just after the initial explosion.* (b) (6) (b) (7) (c)

CIA response:

CIA used several criteria individually as well as in conjunction with one another to place a majority of witnesses in a category as seeing only the end event (thus not possibly have seen a missile before the first explosion). Less than 10 % are believed to have seen something close to the initial event and these are not any of the witness locations [redacted] determined in c) above. The CIA criteria for placing a majority of witnesses in the end event were: (b) (6) (b) (7) (c)

a) Witness descriptions of events with total duration of observations of a few to about 20 sec and detailing the aircraft hitting the water. These witnesses could not have seen an ascending object prior to this point, 30 sec or more prior. Although acknowledging witness errors in estimating times of observations, CIA does not believe that all witnesses would make errors consistent in the same direction (ie. shorter than the total event as opposed to longer) nor that witnesses would all be off by at least 150 %. If witnesses see the aircraft hit the water after stating observation of the crippled flight for 20 sec, they could not have all mistakenly actually seen a 50 plus sec event.

b) Witnesses reporting observations within a few to 20 sec of hearing sound of initial explosion. Sound takes from 43 sec to over a minute to reach witnesses. Based on the timing of when they heard this first sound compared to when they see the aircraft hit the water and the total duration of their observations, it can be shown that they are observing the final events only (ie. last 20 seconds or so and not the entire 50 sec flight).

c) Witnesses observing a huge explosion and fireball as well as separation of wing from fuselage

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and burning debris falling into water at end of event in about 10 sec. This large explosion and separation of wing and fuselage is known to have occurred in the final seconds of the crippled flight. It is supported by a [redacted] hit of the large fireball at the same approximate time as well as the NTSB structure sequencing group's findings from aircraft debris on the ocean floor. These witnesses could not have seen the initial event having seen the end and only described observations of a few to 20 sec.

(b) (3)

d) Many witnesses note an ascending object rising straight up with little or no azimuth change. This suggests either observations of the initial or end event only of the cripples aircraft's flight. When taken in conjunction with those points a - c above, CIA believes they are witnessing the end event only.

e) Many witnesses do not even describe an ascending motion of anykind and only a descending fireball and could thus not have seen an ascending missile.

f) FBI provided locations of 8 positions with azimuth readings to an observed ascending object are more consistent with observations at the end of the cripple flight as opposed to the beginning. All this shows is that these witnesses could have been observing the end of the aircraft's crippled event and that whatever they saw, it is more likely to have occurred near this position as opposed to the position of flight 800 at the time of the initial explosion.

Employing all these factors in conjunction with one another allows CIA to pinpoint the approximate timing of a majority of witness observations to this end time frame. This is intuitively consistent as well. The most visible portion of the aircraft's crippled flight is within the last 10 of about 50 seconds and is the most likely portion of the event most witnesses should observe. These witnesses all describe something consistent with this end event both in details of their observations as well as timing relative to the aircraft's impact with the ocean.

5) NTSB chaired sequencing group indicated that the aircraft's wing tips separated from the aircraft at some point 10 - 30 seconds after the initial event and were due to a positive 'g' overload. Estimation of this overload range from 3 - 5.2 gs. Boeing's calculations for minimum airspeed for these g conditions are 306 knts (.6 Mach) equivalent airspeed (EAS) and 426 knts (.84 Mach) EAS. It is important that this data be taken into account. To be consistent with the Agency scenario, the aircraft would have to achieve this g overload no earlier than 10 sec after the initial event. If the initial 'pitch up' was higher than 3 gs, the Agency scenario would be inconsistent. If the g condition occurred after this initial pitch up and after the aircraft began its descent, no witness observed such a condition in their reporting.

CIA response:

CIA still does not believe that it is necessary to re-create the aircraft's trajectory completely to reach its conclusion. However, matching the NTSB finding is possible in numerous ways throughout the 10 - 30 sec of the crippled aircraft's flight. CIA does not believe that the exact occurrence aboard the aircraft can be determined and is at once leery of using deduced findings from sequencing group work in order to try and fit a model of where in the aircraft's flight such an overload would have occurred. Nevertheless, it is possible for the wing tips to have departed the aircraft after the 10 sec timeframe. The initial explosion could have weakened the wings carry through considerably with the front spar rotating forward shortly after the initial explosion. This was determined by the sequencing group. Thus at any point in time after this point an overload could have caused loss of the wingtips from an overload. This overload could have occurred at any point up to 30 sec into the event. While it is possible that witnesses would not have seen the wingtips separate, it is incorrect to say that they did not absolutely see such and event in the descending fireball, which no one will argue is not portions of flight 800. It is possible the wing tips separated from the fuselage moments before the entire left wing separated plummeting the aircraft into the water. Such a g overload and speeds required could certainly be achievable at this point in the aircraft's flight. CIA does not propose that this occurred only that it is plausible. CIA does not have the capability to do this but insists that it is not necessary to show exactly what happens, only that it is possible to match the sequencing group's findings, in order to reach Agency conclusions.

6) Agency scenario is inconsistent with witness [redacted] report.

(b) (6)
(b) (7) (c)

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CIA response:

CIA does believe that there could be a portion of the trajectory of the crippled aircraft just prior to the largest explosion and wing separation point which could be consistent with witness [redacted] report. We do not believe he witnesses the entire cripples flight of the aircraft. (b) (6) (b) (7) (c)

7) The lack of evidence recovered should not be used as a yardstick to measure an objective assessment as to what witnesses observed (what did they see as opposed to missile or mechanical failure)

CIA response:

CIA analysts never utilized the lack of other evidence in the investigation to sway judgments as to what witnesses saw. Objective evaluation of witnesses compared to one another were employed. The fact that no evidence has been recovered merely supports the CIA conclusion.

8) Since so much weight is placed on the accuracy of what witnesses heard (timing and number of booms heard), if no logical explanation of what they could have heard is reached, some doubt should be given as to the accuracy of their observations. It is doubtful that engine stalls would be audible at the distances of most witnesses.

CIA response:

The CIA use of sound analysis is dependent primarily on the correlation of what witnesses observe relative to when they hear the first sound, that of the initial explosion aboard the aircraft. That is the only use of witness reported timing necessary (and it need not be accurate to the exact second) in order to reach Agency conclusions, that the event was approximately 50 seconds (correlation of first sound heard by numerous witnesses as well as approximate last radar point), that the wing separated from the fuselage at about 43 sec (supported by [redacted] and the debris from the ocean floor), and that most witnesses observed the end event only (see CIA response to 4 above). It is not important to determine what exactly caused the explosions on the aircraft which the witnesses heard in order to reach Agency conclusions, only that an audible explosion is possible. (b) (3)

9) Contrary to Agency briefing, some witnesses do report seeing something hit the aircraft.

CIA response:

CIA categorized 8 witnesses in group III, that is witnesses which distinctly used the words "hit the aircraft". CIA point was that none described observing both ascending object and aircraft simultaneously. CIA is able to place witnesses in group of witnesses with insufficient time to observe anything but final events.

10) Witnesses observing right to left or east to west motion of an ascending something prior to an explosion have not been successfully explained by the Agency scenario.

CIA response:

11) Almost all witnesses observing west to east motion CIA analysts believe see a portion of the crippled aircraft's flight near the end only (this in no way a missile). CIA analysts have theories, which can be briefed, as to what witnesses may be observing but this is not required in order to reach the conclusion that these witnesses must be observing events near the end and not the beginning (where a missile would have to have been employed).

The CIA template used which allows analysts to reach the conclusion that the witnesses did not see a missile hit flight 800 can not account definitively for all witnesses provided by the FBI for analysis. However, 99 % of the witnesses CIA analysts believe are explainable within the Agency scenario. It is unlikely that these few problematic witnesses, not consistent among one another in terms of

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observations, are seeing a possible missile.

(b) (3)

12) IR [redacted] hit timing is contrary to CIA estimation of entire flight duration.

CIA response:

(b) (3) The timing of the [redacted]R hit is not at all inconsistent with the Agency scenario and in fact coincides within one second of Agency's approximation of when the large airborne fireball erupts on the aircraft (43 sec) and the left wing separates from the fuselage. No [redacted] hit was found before or after this event, known to be the hottest and most visible event during the aircraft's crippled flight. (b) (3)

13) Concerns remain that at least 30 witnesses are not accurately accounted for by the Agency scenario. Further concerns emerge over the possible 'missile self destruct/proximity' theory, which would likely leave little if no evidence of a hit on the aircraft.

CIA response:

CIA believes it has accounted adequately for nearly all of the witnesses analyzed. We put very little credence in the self destruct/proximity warhead detonation theory for numerous reasons. If a portable SAM were employed to hit the aircraft, which is technically feasible, we assess that it is highly unlikely that the small warheads (2-3 lbs) would cause the catastrophic loss of an aircraft in the manner of flight 800. This sort of damage and destruction is also not consistent with any past successful portable SAM hits on aircraft of this size. All past portable SAM attacks on aircraft of this size, hit in an engine, and the aircraft returned safely. A self destruct/proximity hit would be even less likely to cause the kind of reaction and chain of events necessary to bring down the aircraft in the manner known.

14) Recommend that the Agency withdraw its conclusions until:

a) Integrate all radar data when available.

b) Validate key witness statements to date by re-interviews when available.

c) Reevaluate the witnesses presenting the problems.

d) Retract written comments about lack of evidence in case to date. It only complicates law enforcement aspect of case.

e) Recreate scenario using only 30 or so problematic witnesses.

CIA response:

CIA will integrate all radar data provided but believe it will not significantly change existing data and certainly not affect end conclusions. Re-interviews while useful must be taken with extreme caution due to the time which has passed since the tragic date, August 17, 1996, nearly one year ago. CIA will continue to look at the 'problematic' witnesses but believe we have adequately explained almost all of them within the Agency scenario. CIA analysts reached their conclusions after months of detailed analysis and would be remiss to retract our findings at this point in time. All witnesses must fit into the scenario for it to be an accurate scenario. CIA analysts believe that the problematic 30 already fit into the Agency scenario.

15) Writer believes that the aircraft might have possibly decreased in altitude fairly dramatically before pitching up. The loss of the forward 1/3 of the aircraft downward may have caused a pitch down motion first. This possibility might be successfully incorporated into the scenario to explain some issues like the wingtips loss.

CIA response:

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This scenario, for an initial downward motion of flight 800 just prior to a pitch up is certainly possible and could certainly be consistent with our analysis. As stated earlier, the aircraft's trajectory was not modeled nor is there any effort to try and accurately portray what occurs on the aircraft at all points in the flight. It is not necessary to do this to reach Agency conclusions.

CC: [redacted] (b) (3)

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Program to Analyze x,y Data From Radars

JFK Data

PARAMETERS USED
Flight azimuth = 26.50
Magnetic offset = 1.50

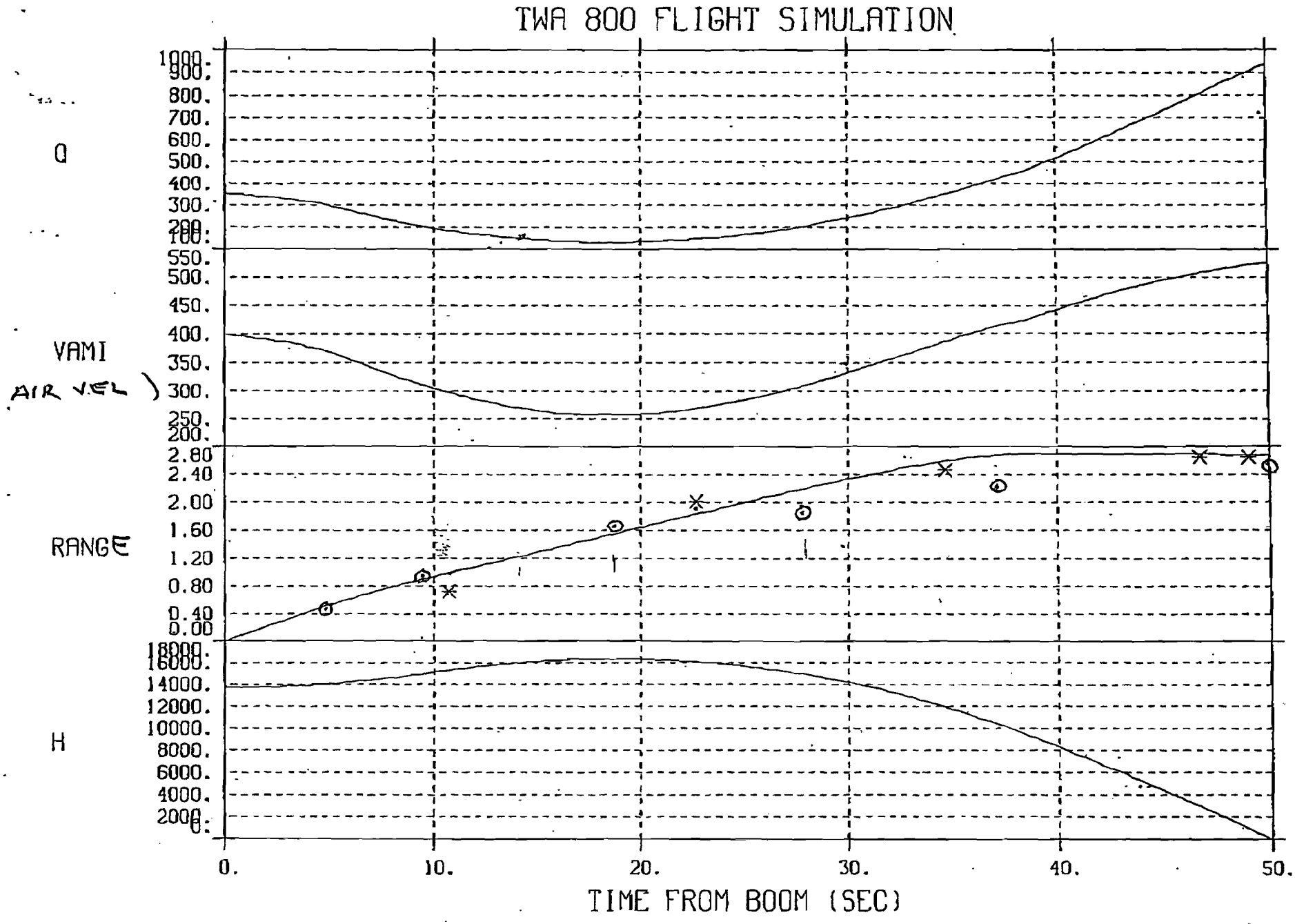
	Time	Rng fm JFK	Rng fm PO	Dis to ISP	Calc lat	Calc lon
1	16.65	50.4600	0.5072	21.5985	40.6613	72.6592
2	16.65	50.2500	0.2758	21.4448	40.6596	72.6637
3	21.25	50.8700	0.9584	21.9023	40.6646	72.6503
4	21.25	50.6800	0.7494	21.7609	40.6631	72.6544
5	21.25	50.4000	0.4411	21.5545	40.6608	72.6605
6	21.25	50.3100	0.3419	21.4886	40.6601	72.6624
7	25.88	50.2500	0.2758	21.4448	40.6596	72.6637
8	25.88	50.8100	0.8924	21.8575	40.6642	72.6516
9	25.88	51.2500	1.3760	22.1878	40.6677	72.6421
10	25.88	50.6200	0.6834	21.7165	40.6626	72.6557
11	25.88	50.4300	0.4741	21.5765	40.6610	72.6598
12	30.48	51.5000	1.6503	22.3776	40.6698	72.6367
13	30.48	50.6800	0.7495	21.7609	40.6631	72.6544
14	30.48	51.0900	1.2002	22.0671	40.6664	72.6455
15	30.48	50.3700	0.4080	21.5325	40.6605	72.6611
16	35.11	51.6500	1.8148	22.4923	40.6710	72.6334
17	35.11	51.1800	1.2991	22.1349	40.6672	72.6436
18	35.11	51.5000	1.6503	22.3776	40.6698	72.6367
19	39.72	51.7500	1.9244	22.5690	40.6718	72.6313
20	39.72	51.6800	1.8477	22.5153	40.6713	72.6328
21	39.72	51.2100	1.3321	22.1576	40.6674	72.6429
22	44.36	51.7800	1.9573	22.5921	40.6721	72.6306
23	44.36	51.9300	2.1215	22.7078	40.6733	72.6274
24	44.36	50.5600	0.6173	21.6722	40.6621	72.6570
25	44.36	51.2500	1.3759	22.1877	40.6677	72.6421
26	48.96	51.9300	2.1216	22.7078	40.6733	72.6274
27	48.96	52.0600	2.2638	22.8084	40.6743	72.6246
28	48.96	50.5300	0.5843	21.6500	40.6619	72.6576
29	48.96	50.9000	0.9914	21.9247	40.6649	72.6496
30	53.60	52.0000	2.1982	22.7619	40.6739	72.6259
31	53.60	52.0900	2.2967	22.8317	40.6746	72.6240
32	53.60	50.5600	0.6173	21.6722	40.6621	72.6570
33	58.21	52.1500	2.3624	22.8784	40.6751	72.6227
34	58.21	52.0599	2.2638	22.8084	40.6743	72.6246
35	58.21	52.2500	2.4718	22.9563	40.6759	72.6205
36	62.84	51.2800	1.4089	22.2105	40.6680	72.6414
37	62.84	52.1200	2.3295	22.8550	40.6748	72.6233
38	62.84	50.4300	0.4742	21.5765	40.6610	72.6598

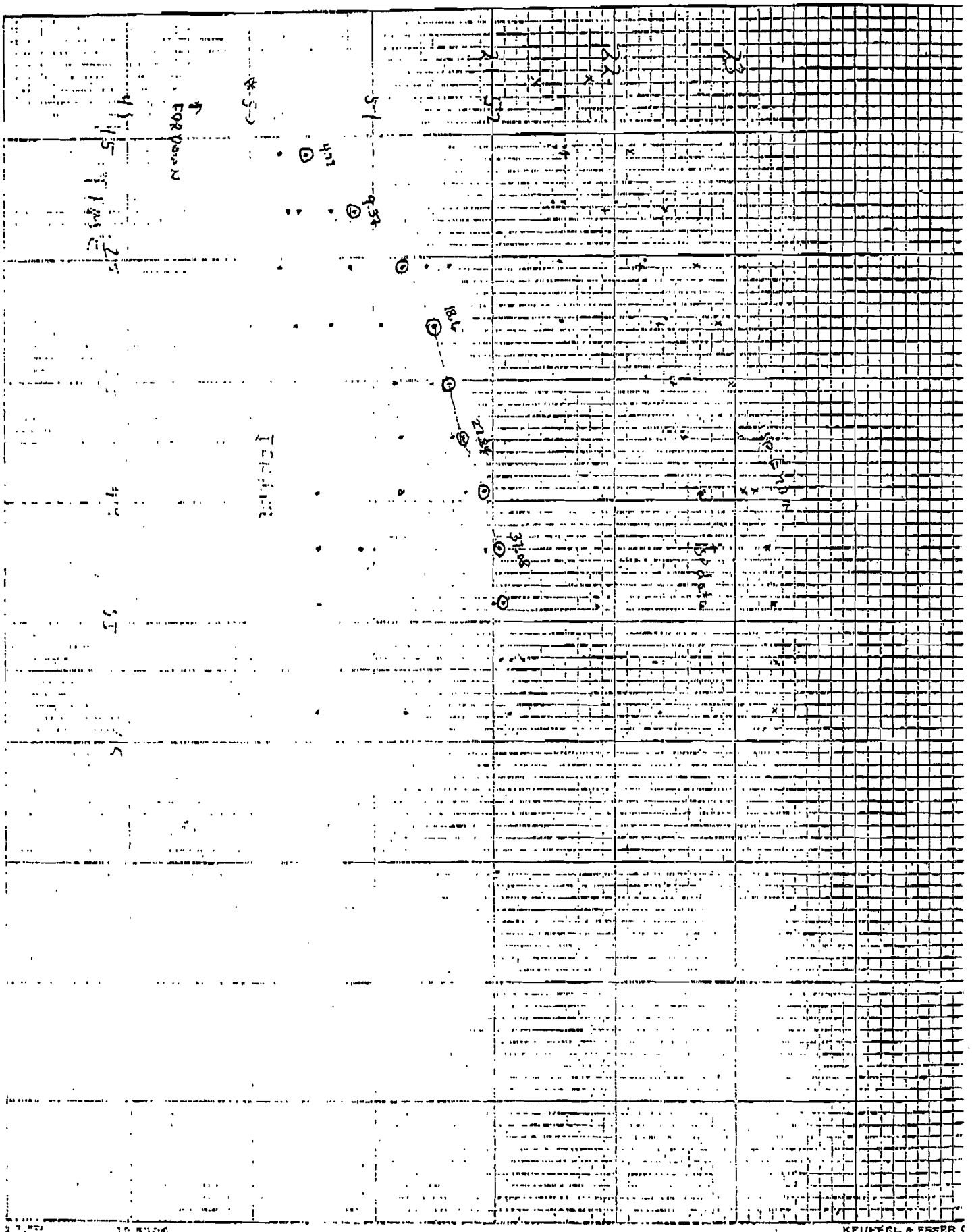
12.25

ISP Data

T-ISP	Rng fm ISP
15.97	21.5100
15.97	21.6000
20.66	21.5999
20.66	21.5100
20.66	22.0100
25.36	21.5600
25.36	22.2600

30.05	21.5600
30.05	22.4200
34.77	22.2600
34.77	22.4600
39.46	22.5700
39.46	22.4600
44.16	22.7300
48.85	22.8700
53.84	21.8500
58.25	22.3200
62.94	22.3700



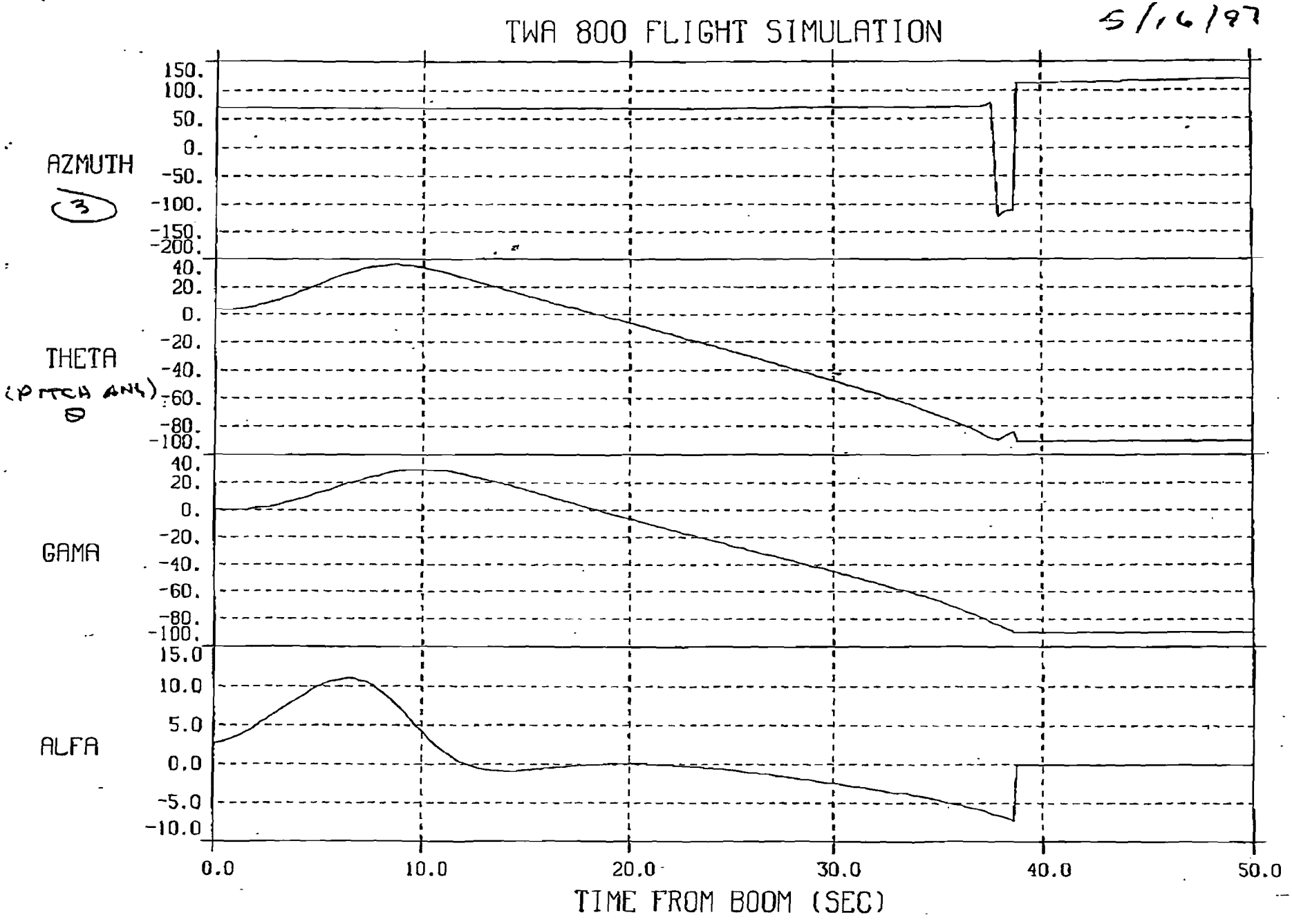


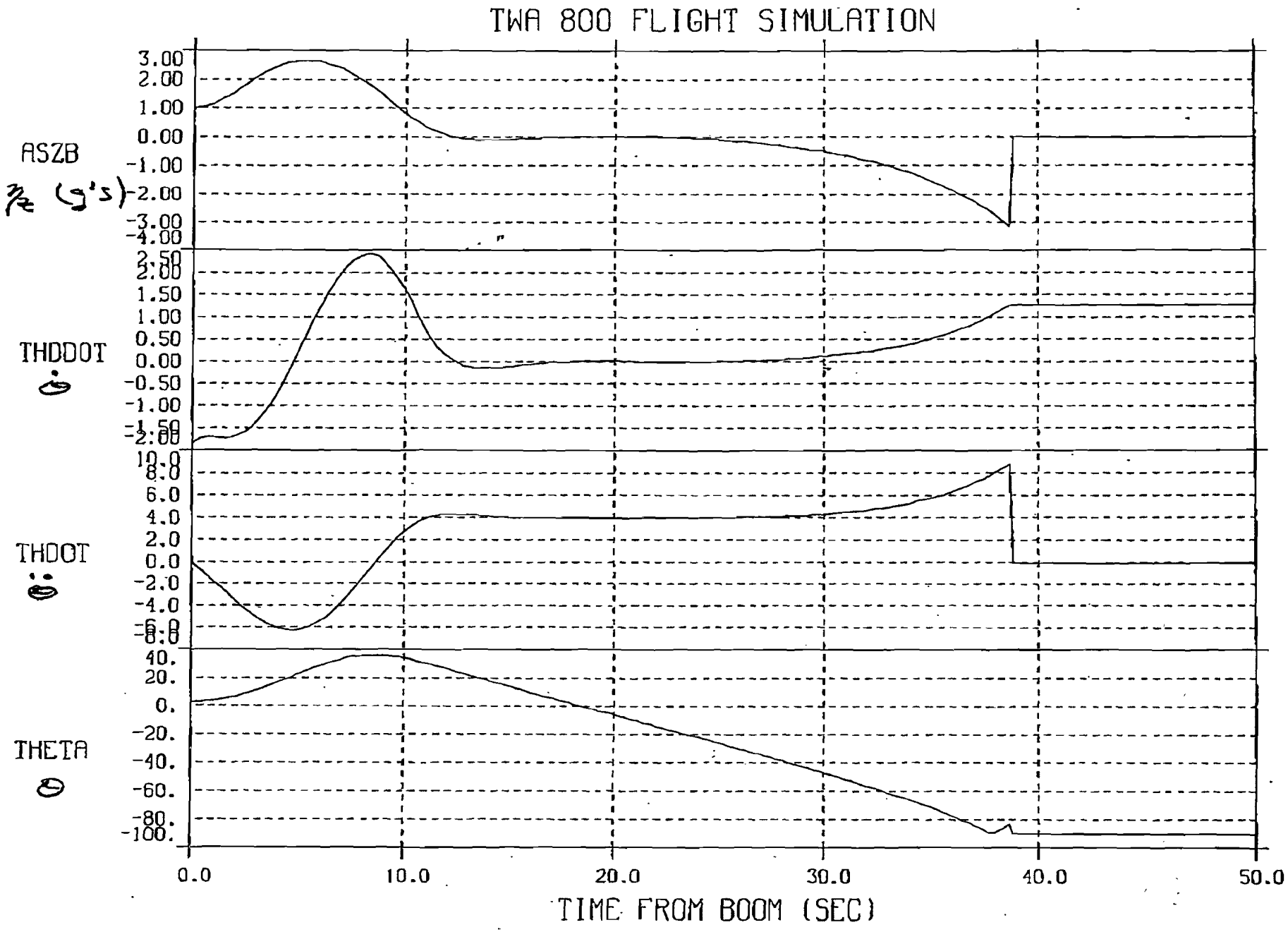
10 X 10 TO THE INCH

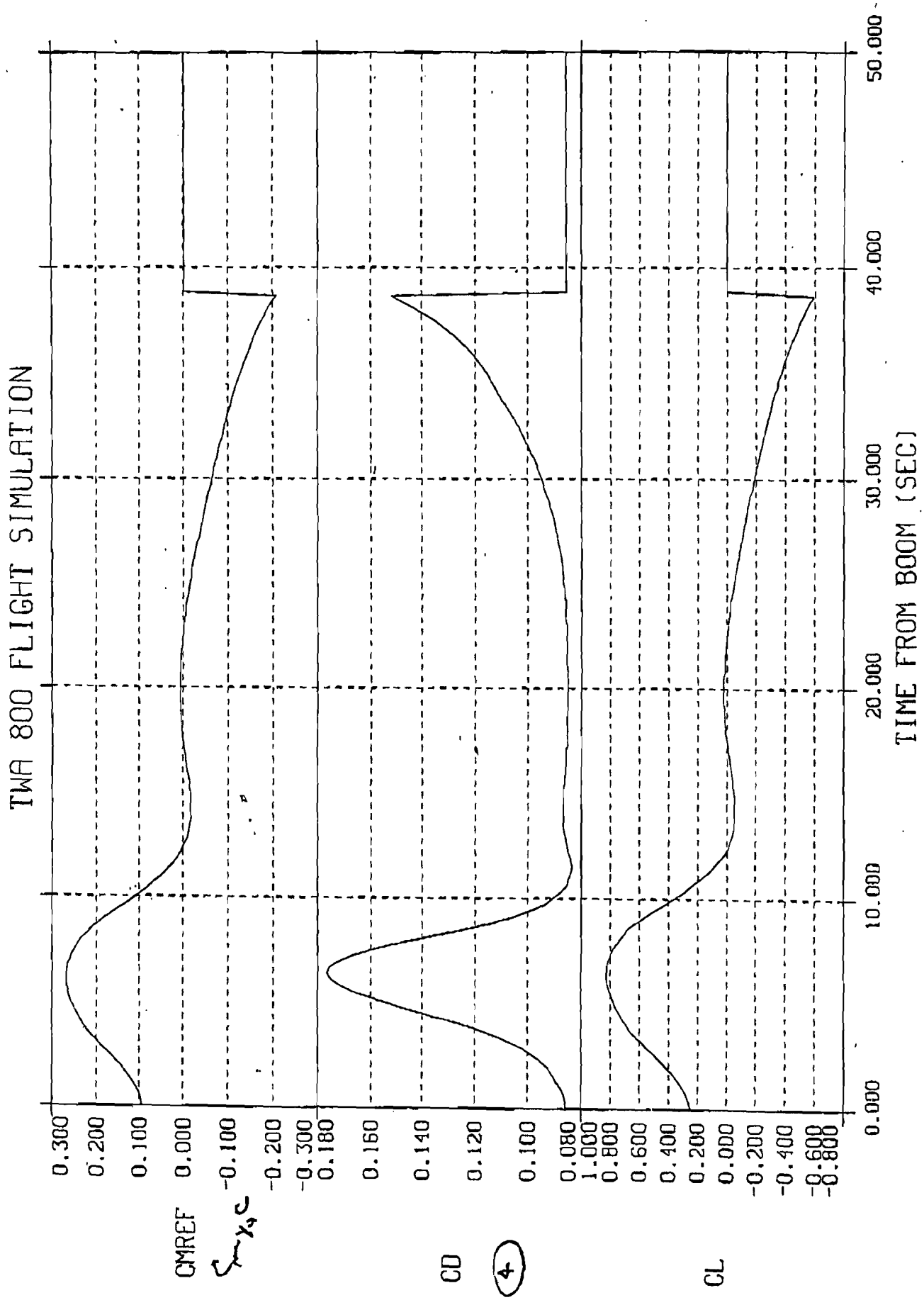
KEUFFEL & ESSER CO.
MADE IN U.S.A.

BEST COPY

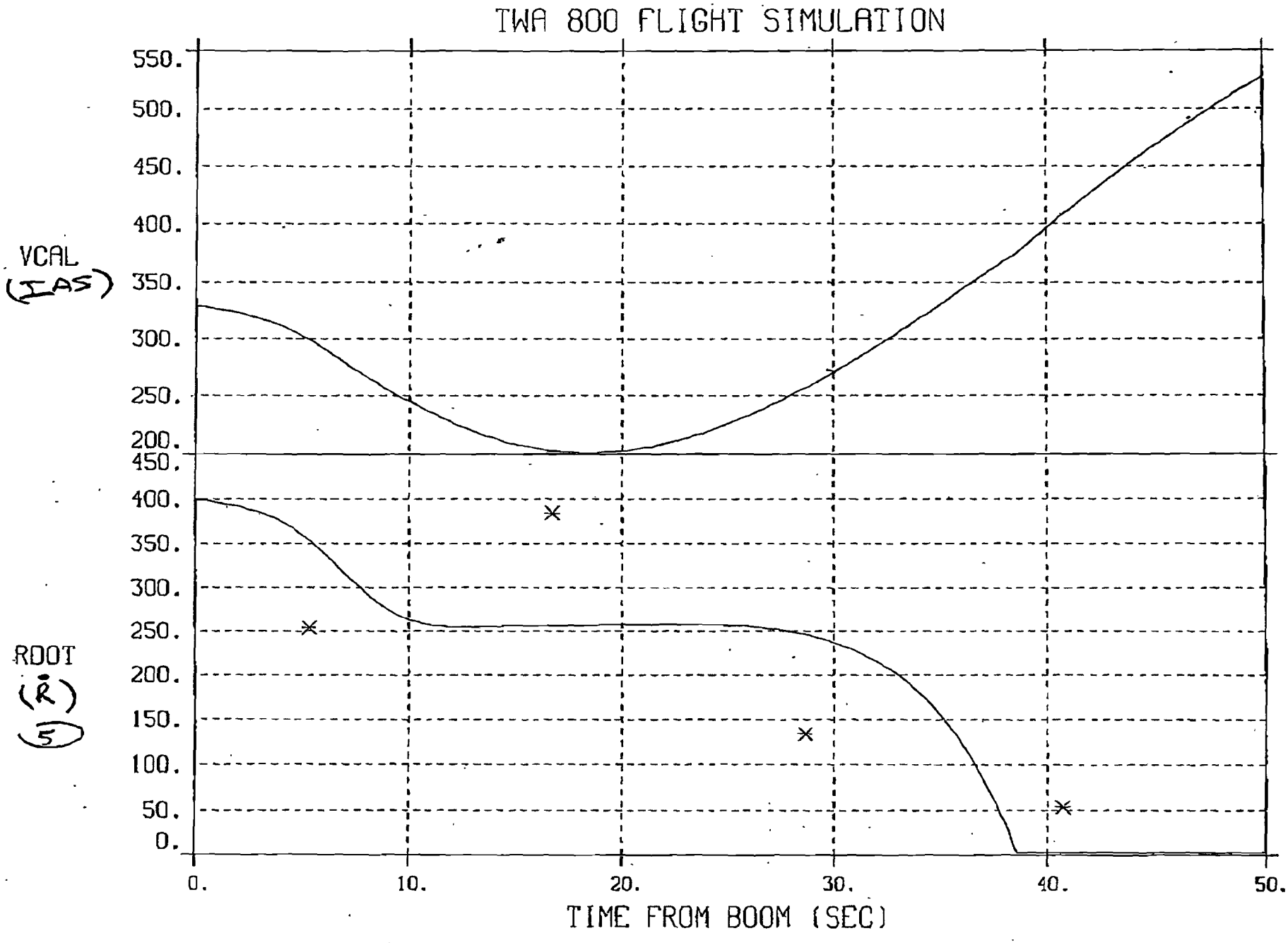
TWA 801
5/16/97

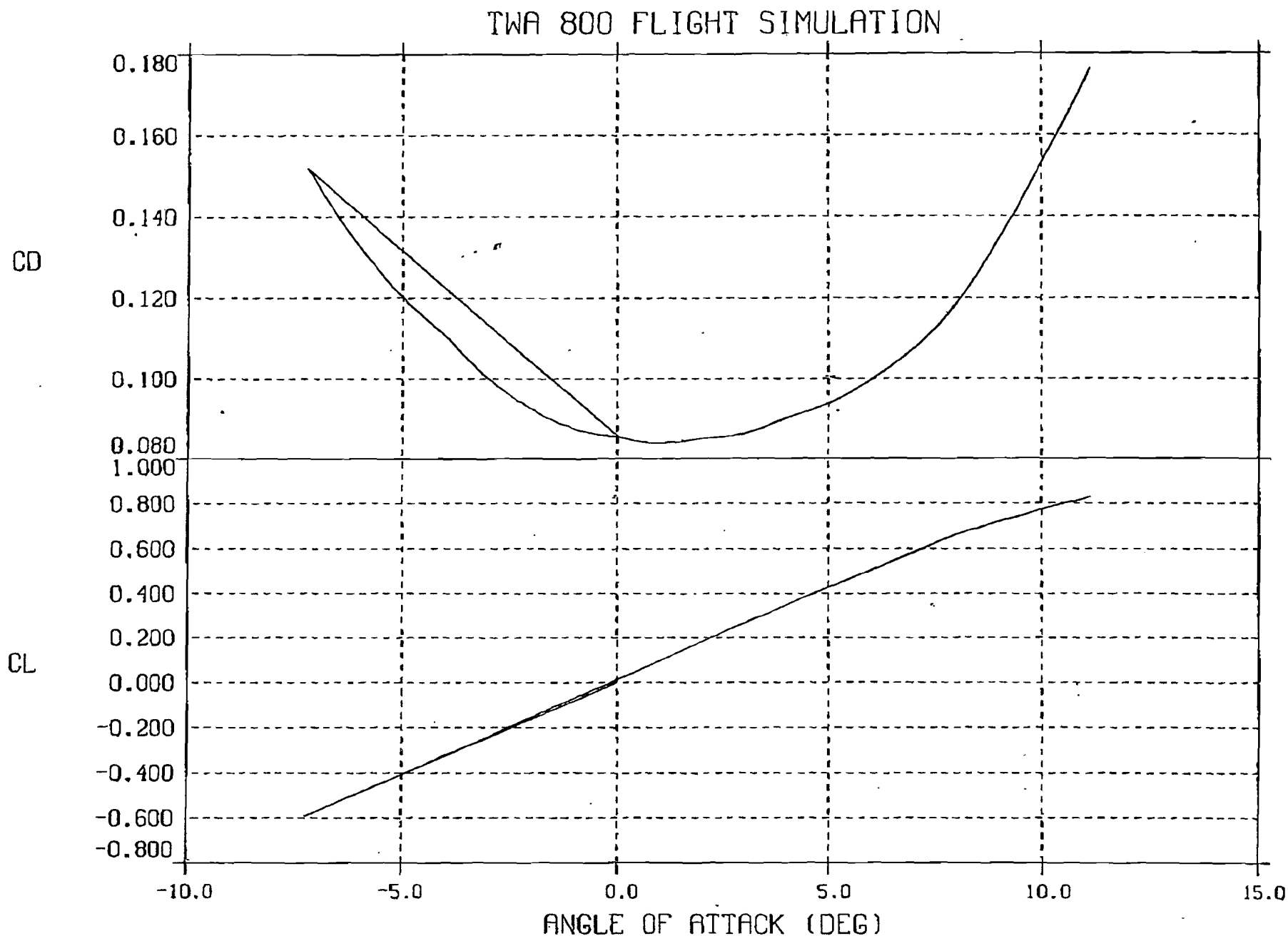


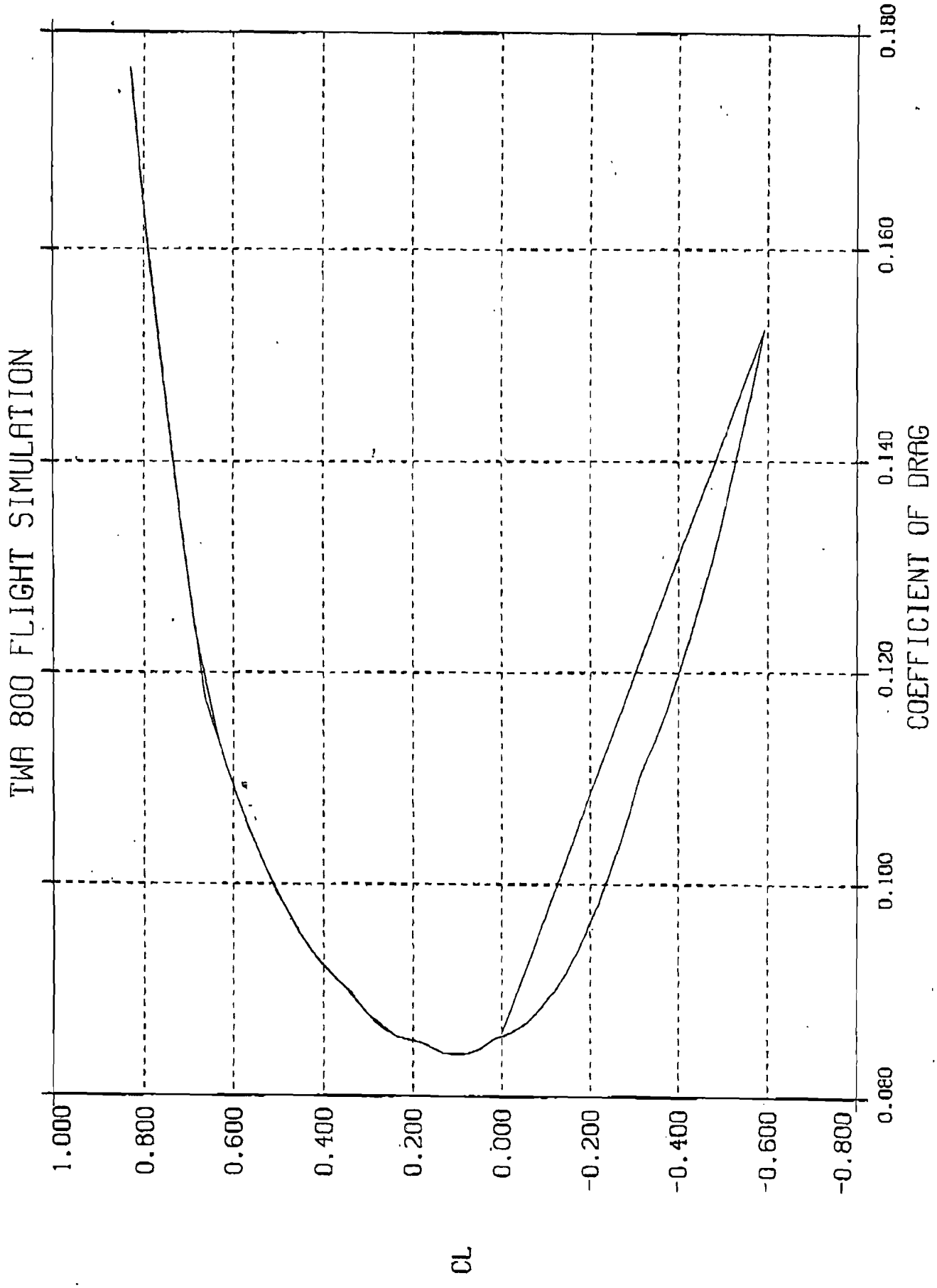


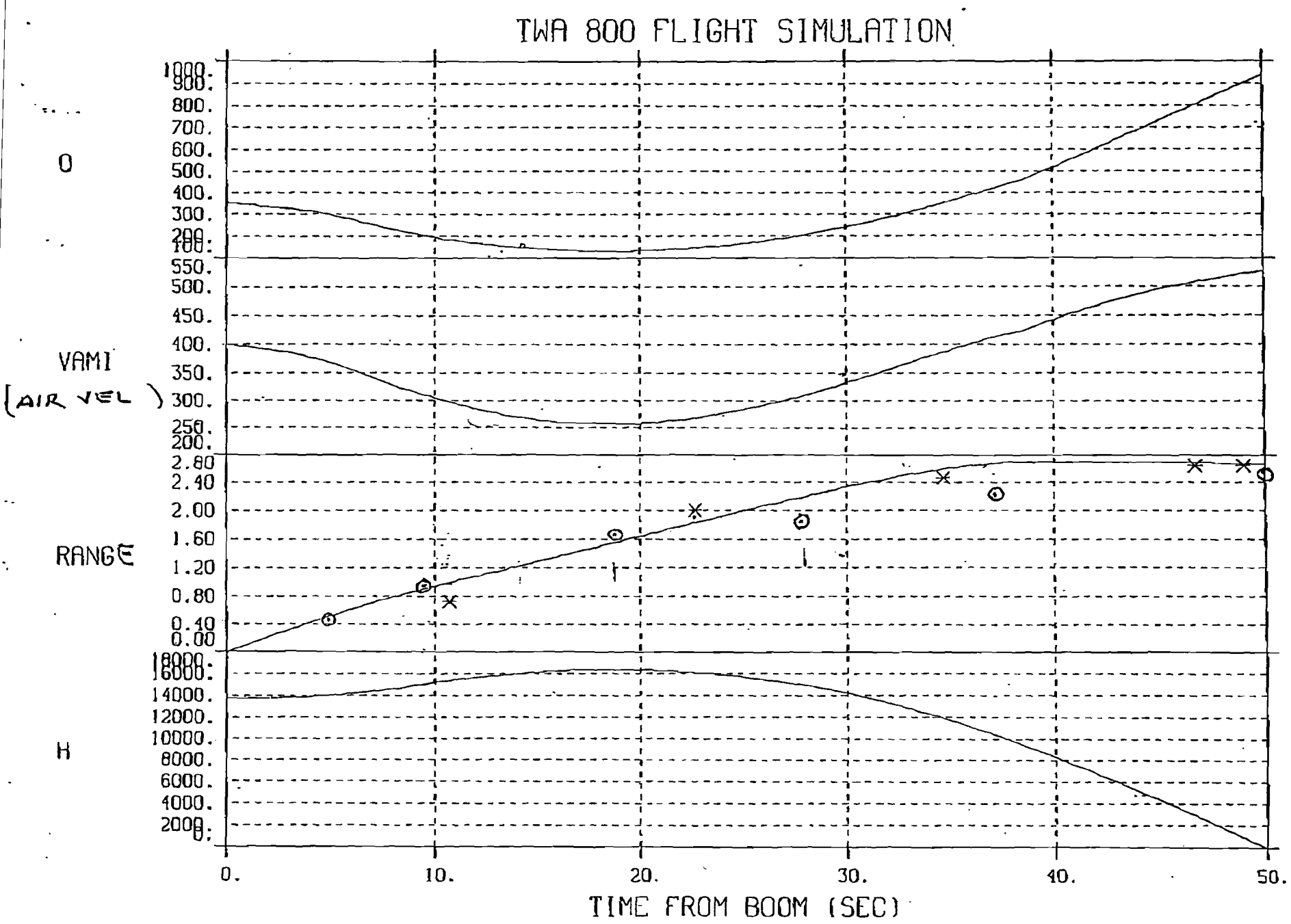


(4)









UNCLASSIFIED

TO: [redacted] (b)(3)
FROM:
DATE: 05-12-97 11:41:55 AM
SUBJECT: Re: Description of TWA Flight 800 for Video

Maximum flight path angle?

Requested info.

1) Time of nose section impact = 38.9 +/- about 2 seconds.

2) Pitch-up takes about 10 seconds (Boeing gets 20 seconds) -- it is not "abrupt".

3) Maximum pitch angle is about 40 degrees (Boeing gets ~~100~~ 80 deg). I think the aircraft may possibly have gone all the way over (pitch angle > 270 degrees). Maximum altitude = 17400 feet (Boeing gets 18000 ft).

4) Boeing and I agree about the unlikelihood of the wing tips breaking off due to "aerodynamic overload" at a point in the flight where the dynamic pressure is almost nil. To have this occur symmetrically in a low load condition is VERY unlikely. I get an indicated airspeed of about 150 knots -- Boeing gets 50 to 100 knots -- at peak altitude. Based on trajectory simulation, I do not believe that loss of the wing tips would have any discernible effect on the trajectory provided their loss occurred symmetrically and at T0+10 or later.

5) Bullet #7 -- altitude unknown.

6) It is my understanding that wing fuel is burnt first and is not "reserve" fuel. No specific fuel tank is the "reserve" tank.

7) Under the heading of pure speculation come,
   a) Wing tip loss is symmetric and causes specific motion (other than at final breakup).
   b) Engines stall just as the wing tips come off.
   c) Nose breaks downward (although this is what I would show).
   d) Stalling engines ignite fuel.
   e) Left wing spirals leading edge first.

I think stalling engines is the source of the sound people heard. It is not the only possible source of ignition for fuel in the air. Wing tanks could easily have been ruptured by the initial explosion and this fuel ignited by burning debris. I do not think it is a good idea to present speculation as fact. Some speculation is OK and surely expected.

CC: [redacted] (b)(3)

APPROVED FOR RELEASE
DATE: MAY 2008

UNCLASSIFIED

62

To: [redacted] (b)(6)
Boeing

From: [redacted] (b)(3)
Expert in aerodynamics and all things physical

Tom,

I send this note along with a trajectory similation program input in an effort to clarify what I have been up to.

1) The H (altitude) variable loaded into the ITVT table (when using a -15 value in the third column) causes event #20 (the last event) to occur at the input value (zero). The CRVT table (just below) associates an "observation" (time=50 sec) to be to be linked to this event. Thus the effect is an "observation" (data) point of "water impact at 50 seconds.

2) VRF means "variable to be replaced". Thus VRF2 causes ARG2 (pitching moment coefficient" to replace the variable CM1T. CM1T is a multiplier for the CM1T table (see above--the table with 1.0's). Thus the calculation of the multiplier (ARG2) is shifted into the pitching moment table (CM1T) multiplier (which only contains 1.0 values) and the output of the CM1T is the pitching moment used in the trajectory calculations.

---------- Remaining comments refer to the plots ----------

3) "AZMUTH" is the azmuth of the nose tip. I have trird trajectories that pitched through many hundreds of degrees. This plot helped determine when the vehicle passes through a pitch angle of +/- 90 degrees. Not of much use here.

4) I include plots of CL, CD vs both time and angle of attack plus CL vs CD. Note that these values are what was calculated by the program and are not (direct) inputs.

5) RDOT is range rate. The plotted values are the average range rate between the radar data points.

Ten seconds ago a fellow left my office after dropping a table on me.

Time of first occurence (sec)	Distance (Nm)
31:11.88	0.0
31:16.65	0.485
31:21.25	0.96
31:30.48	1.67
31:39.72	1.93
31:48.96	2.24
31:61.88 (Impact +/- 2s?)	2.52

Distance is measured along the (best estimate) flight path so that a plainer analysis applies.

This set is "a best estimate" -- not done by me--but is (apparently) a set that both CIA and the FBI will/can live with. Note that I have added these points to my curves and that these curves, while developed using the least squares process, did not use this data. I will be rerunning against this data set. These data suggest that my minimum velocity (at t=20s) may be a little high. The final conclusion -- a good trajectory -- probably will not change.

[redacted] (b)(3)

APPROVED FOR RELEASE
DATE: MAY 2008

TRAJECTORY PROGRAM INPUT

```
0  BUCKET SIZE REQUESTED IS200001
0 CPU TIME AT CALL TO INP1M =     0.0
1
 ********H     RUN SETUP FOR TWA FLIGHT 800 ANALYSIS                ******
 ********H     USES BOEING'S SECOND ESTIMATE CL-CD DATA
 ********H     AERO CENTER OF PRESSURE IS INPUT (SEE ARG2)
 ********H     EVENT 13 STARTS PROBLEM                              ******
 ********H     EVENTS 15/16 START POINT MASS (WING BREAK)           ******
        2L       0 0.                  11.0            D     2  G1
          D      3GMT                  4 0.0           D     5FP1
                 6 0.0                 7 0.0                 8 0.0
        3L       0 0.                  11.0            D     2  G1
          D      3TLP                  4 0.0           D     5FP1
                 6 0.0                 7 0.0                 8 0.0
       10L       0 0.                  11.0            D     2  G1
          D      3TLP                  4 0.0           D     5FP1
                 6 0.0                 7 0.0                 8 0.0
       11L       0 0.                  11.0            D     2  G1
          D      3TLP                  4 0.0           D     5FP1
                 6 0.0                 7 0.0                 8 0.0
       12L       0 0.                  11.0            D     2  G1
          D      3TLP                  4 0.0           D     5FP1
                 6 0.0                 7 0.0                 8 0.0
       13L       0 0.                  11.0            D     2  G1
          D      3TLP                  4 0.0           D     5FP1
                 6 0.0                 7 0.0                 8 0.0
       15L       0 0.                  11.0            D     2  G7
          D      3H                    4 9350.0        D     5VDR
                 6 0.0                 7 0.0                 8 0.0
       16L       0 0.0                 11.0            D     2  G1
          D      3TDURP                4 0.0           D     5FP1
                 6 0.0                 7 0.0                 8 0.0
       20L       0 0.                  11.0            D     2  G7
          D      3H                    4 60.0          D     5VDR
                 6 0.0                 7 0.0                 8 0.0
                 6 0.0                 7 0.0                 8 0.0
       20L       0 0.                  12.0            D     2  G1
          D      3TC1                  4 60.           D     5FP1
                 6 0.0                 7 0.0                 8 0.0
TSPXM  2  FESN   20.
**********************************************************************
**********************************************************************
ITIFM  2  T1VAL  1.0          T2VAL  1.0          T3VAL  1.0
PFRPM  0  RSED1F 1.0          MAXKF  9.0          QIMPF  2.0
PFRPM  0  COVF   1.0          ITPRF  -9.0         PINF   0.0
PFRPM  0  I1FL   2.0          T1MD  -1.0          T2MD  -1.0
PFRPM  0TDT1CVT GMT           D      GMT
                RANG          D      RANG
        *   T1MD SECOND AND THIRD VALUES ARE THE NUMBER OF POINTS IN THE
        *   T1VAL TABLE FOLLOWED BY THE INVERSE OF THE SIGMA ACCURACY
        *   (IN THIS CASE IT IS 1/0.05 NAUTICAL MILES).
PFRPM000T T1MD  1.                  3.                  20.
PFRPM  0  BNDS   200.               1 100.              2 200.
PFRPM  0       3 200.               4 200.              5 200.
PFRPM  0       6 200.               7 200.
MPEXM000  ITRF  0.0 *
ITERM000T ITVT  1.0                 20.                 13.
          D     ARG1T               -4.                 0.001
                0.                  0.                  0.
                0.                  0.                  0.
                2.0                 20.                 13.
          D     ARG1T               -5.                 0.01
                0.                  0.                  0.
                0.                  0.                  0.
                3.0                 20.                 13.
          D     ARG1T               -6.                 0.001
                0.                  0.                  0.
                0.                  0.                  0.
```

* ITRF=0 (NO ITERATION)

= 1 USE LEAST SQUARE ITERATION

ITVT CONTAINS THE VARIABLES TO BE INCLUDE IN THE LEAST SQUARES SEARCH SEE ARG1T BELOW (Xc = CENTER OF PRESS

```
                4.0                 20.                 13.
          D     ARG1T               -7.                 0.01
                0.                  0.                  0.
                0.                  0.                  0.
                5.0                 20.                 13.
          D     ARG1T               -8.                 0.001
                0.                  0.                  0.
                0.                  0.                  0.
                6.0                 20.                 13.
          D     ARG1T               -10.                0.001
                0.                  0.                  0.
                0.                  0.                  0.
                7.0                 20.                 13.
          D     ARG1T               -12.                0.001
                0.                  0.                  0.
                0.                  0.                  0.
                8.0                 20.                 -15.
          D     H (ALTITUDE)        0.                  100.
                0.                  0.(VALUE)           0.
                0.                  0.                  0.
ITIFM  0  T1VAL 1.0
ITIFM  0T T1VAL 22.7                2.05
                34.7                2.50
                46.7                2.69
ITIFM000T CVRT  1.                  0.                  20.
                0.            D     TC1                 .0
                50.0                .0                  .0
                .0                  .0                  .0
PFRPM000  MD1T  1.            MD2T  1.
PFRPM000T MD1T  1.                  1.                  0.5
*****************************************************************
*****************************************************************
ENVRM  2T GRAVTT 2.00000000         0.0                 0.00108271604
                  0.                3.00000000           0.0
                 -0.2630140E-05     0.0                  4.00000000
                  0.                -0.2349500E-05        0.0
SERVM  2 IITPR2T 6.
INFXM  2ICTPRI2T 0.3
INFXM  2  TPRV2T -10.
INFXM  2TDTPRV2T TC1          D     H           D     MACH
          D      Q            D     RANG        D     VAMI
          D      CZ           D     CX          D     CM
          D      FAZB         D     FAXB        D     OMYB
          D      ASZB         D     FTXB        D     DOMYB
          D      ALEA         D     MAYB        D     IYY
          D      GAMA         D     LATV        D     LONV
          D      ELRLH        D     AZRLN       D     GMT
          D      CXB          D     VDR         D     RB1
          D      ARG1         D     ARG2        D     CM1T
          D      ARG3         D     ARG4        D     ARG5
          D      WT           D     ASXB        D     DVDR
          D      ARG6         D     VCAL        D     ARG7
          D      ARG8         D     ARG9
        0E
CYCXM  2  DTEA   0.10          Q0P1  1.0         TC1   0.0
CYCXM  2  LFDT1  0.10          TC4   0.0
CYCXM  2  NOISB  0.0
DPGXM  12 IGCF   0.0           TRKF  0.0
ENVRM  2  ATCF   4.0           ATUF  0.0         AWT   1.0
ENVRM  2  GRVDF  1.0           VWF   -1.0
ENVRM  2I VWT    TC1    6
                 -100.0        4.8
                 20000.0       4.8
ENVRM  2I AWT    TC1    6
                 -100.0        70.
                 20000.0       70.
INTXM  2 INIV    50.0          DTMAX 2.0         INTGF 2.0
PROPM  2 DLO     0
```

FT65

(1) SEE NOTE

TC1 IS TIME FROM FIRST EVENT (IE IN THE WATER AT 50 SEC) "OBSERVATION DATA"

```
RMOTM  2  ETA2    0.0            ETA3    70.93          DHI     2
RMOTM  2 DIN      C
SERVM  2 IITPRNT 6.0
**********  BEFORE BOOM CRUISE VELOCITY=667.5 FT/SEC (330 KNOTS IAS)
TMOTM  2  AZL    70.93           VAMI0   667.5          DIN     C
TMOTM  2  LATL   40.6448         DL0     1              LONL    -72.6806
TMOTM  2  AZVA0  70.93           GAMA0   0.6            HSLL     13820.0
TMOTM  2  ALFA0  2.942           OMYB0   -0.
TMOTM 10 DL0      1              TMTF    1.00000000     HSLL    0.0
INFXM  2  EVPF    0.00000000     PLOTT  -1.00000000
PROPM 11 DL0      1
TMOTM 12 DL0      1
AERMM  2 DIN      C              DL0     2
AERMM 10 DIN      C              DL0     2
AERMM  2  CLDF   0.0             CNSF    6.0            CMSF    0.0
AERMM  2  CXSF   0.0             CM0MT   0.0
AERMM  2  S      5500.0          RB1     27.31
AERMM  21 CZ1T   ALFA     6      NORMAL FORCE COEFFICIENT
                -180.0                    0.0000
                -170.0                   -0.6320
                -160.0                   -0.9280
                -140.0                   -1.1600
                -120.0                   -1.2560
                 -90.0                   -1.6200
                 -40.0                   -1.4500
                 -20.0                   -1.1600
                 -12.0                   -0.8900
                  -8.0                   -0.6706
                  -4.0                   -0.3265
                  -2.0                   -0.1556
                   0.0                    0.0147
                   2.0                    0.1845
                   4.0                    0.3542
                   6.0                    0.5198
                   8.0                    0.6791
                  10.0                    0.7900
                  12.0                    0.8972
                  14.0                    0.9733
                  16.0                    1.0476
                  18.0                    1.0892
                  20.0                    1.1600
                  25.0                    1.2541
                  30.0                    1.3400
                  40.0                    1.4500
                  60.0                    1.5700
                  90.0                    1.6200
                 120.0                    1.2560
                 140.0                    1.1600
                 160.0                    0.9280
                 170.0                    0.6320
                 180.0                    0.0000
AERMM  2  CX1T   -1.0             CZ1T   -1.0            CM1T    0.0
AERMM  21 CX1T   ALFA     6      AXIAL FORCE COEFFICIENT
                -180.0                   -0.0150
                -170.0                    0.0483
                -160.0                    0.0021
                -140.0                    0.0080
                -120.0                    0.0035
                 -90.0                    0.0000
                 -40.0                   -0.0080
                 -20.0                   -0.0170
                 -12.0                   -0.0230
                  -8.0                    0.0088
                  -4.0                    0.0226
                  -2.0                    0.0212
                   0.0                    0.0196
                   2.0                    0.0127
                   4.0                    0.0001
```

INITIAL CONDITIONS

$M = C_M \cdot q \cdot S \cdot (RB1)$

NOTE: INPUT IS C_N, C_X ... I CONVERTED YOUR VALUES OF CL VS C_D. -180<α<180 LOADED BUT NOT (ULTIMATELY) NEEDED

```
                    6.0                -0.0197
                    8.0                -0.0411
                   10.0                -0.0483
                   12.0                -0.0524
                   14.0                -0.0500
                   16.0                -0.0456
                   18.0                -0.0312
                   20.0                -0.0210
                   25.0                -0.0136
                   30.0                -0.0114
                   40.0                -0.0080
                   60.0                -0.0035
                   90.0                 0.0000
                  120.0                -0.0035
                  140.0                -0.0080
                  160.0                -0.0021
                  170.0                -0.0483
                  180.0                -0.0150
AERMM  2I CM1T  ALFA    6       MOMENT COEFFICIENT
                 -181.0                 1.0
                  181.0                 1.0
AERMM 13ICCM0MT 1.0
SERVM 13  ARG1T 1.0
SERVM 13I ARG1T TC1     6       CENTER OF PRESSURE (FT) (CG AT 120.67)
                 -100.                120.3
                  0.0                 119.675430
                  10.291653           121.806901
                  24.401291           120.571152
                  40.0                120.412872
                  50.00               121.388077
SERVM 13I ARG2T ALFA    6       NORMAL FORCE MULTIPLIER
                 -181.0                -1.0
                  181.0                -1.0
SERVM 13I ARG3T ALFA    6       AXIAL FORCE MULTIPLIER
                 -181.0                -1.0
                  181.0                -1.0
********H     NOTE: CX BIAS IS CALCULATED AS ARG1 AND SHIFTED INTO CXB.
********H           USING CXB=-K1*COS(ALFA)-K2*COS(ALFA)**2
********H           ARG2 CALCULATES CM--A2C1=1/RB1, A2C2=CGREF/RB1 AND
********H           ARG1T = CENTER OF PRESSURE (FT)
********H           ARG3 CALCULATES THRUST MULTIPLIER, F(ALFA)
********H           ARG6 CALCULATES RANGE RATE
********H           ARG7 CALCULATES LIFT COEFFICIENT
********H           ARG8 CALCULATES DRAG COEFFICIENT
********H           ARG9 CALCULATES MOMENT COEFF ABOUT 1/4C OF MAC
JUNKM 10 DIN      U             DL0    1
JUNKM 13  VRF1  3.0             DVTBR1 CXB            DRVAR1 ARG1
JUNKM 13  VRF2  3.0             DVTBR2 CM1T           DRVAR2 ARG2
JUNKM 13  VRF3  3.0             DVTBR3 FTT            DRVAR3 ARG3
JUNKM 13  VRF4  3.0             DVTBR4 CZ1T           DRVAR4 ARG4
JUNKM 13  VRF5  3.0             DVTBR5 CX1T           DRVAR5 ARG5
SERVM 13  A1C1  -0.041  K1      DA1V1  ALFA            A1FV1 4.0
SERVM 13  A1C2  -0.025  K2      DA1V3  ALFA            A1FV3 1504.
SERVM 13  A2C1  0.03662         DA2V1  ARG1T           A2FV1 9.0
SERVM 13  A2C2  -4.4185         DA2V2  CZ              DA2V3  CZ
SERVM 13  A3C1  0.45            DA3V1  ALFA            A3FV1 4.0
SERVM 13  A3C2  0.05            DA3V3  ALFA            A3FV3 1504.
SERVM 13  A3B   0.5
SERVM 13  A4C1  1.0             DA4V1  ARG2T           A4FV1 9.0
SERVM 13  A5C1  1.0             DA5V1  ARG3T           A5FV1 9.0
SERVM 13  A6C1  1.0             DA6V1  VAMI            DA6V2  GAMA
SERVM 13  A6FV2 4.
SERVM 13  A7C1  -1.0            DA7V1  CZ              DA7V2  ALFA
SERVM 13  A7C2  1.0             DA7V3  CX              DA7V4  ALFA
SERVM 13  A7FV2 4.0              A7FV4 3.
SERVM 13  A8C1  -1.0            DA8V1  CZ              DA8V2  ALFA
SERVM 13  A8C2  -1.0            DA8V3  CX              DA8V4  ALFA
SERVM 13  A8FV2 3.0              A8FV4 4.
```

* BOTH TIME & CP VALUES FROM ITERATION RUNS -- NOTE LARGEST CP-CG = ONLY 1.14 FT

{ $\Delta C_{X_{BUSTED\ NOSE}}$ CXB = C_X BIAS (OR SHIFT)

→ ARG2 = C_M = $\frac{(CG-CP)C_N}{b}$

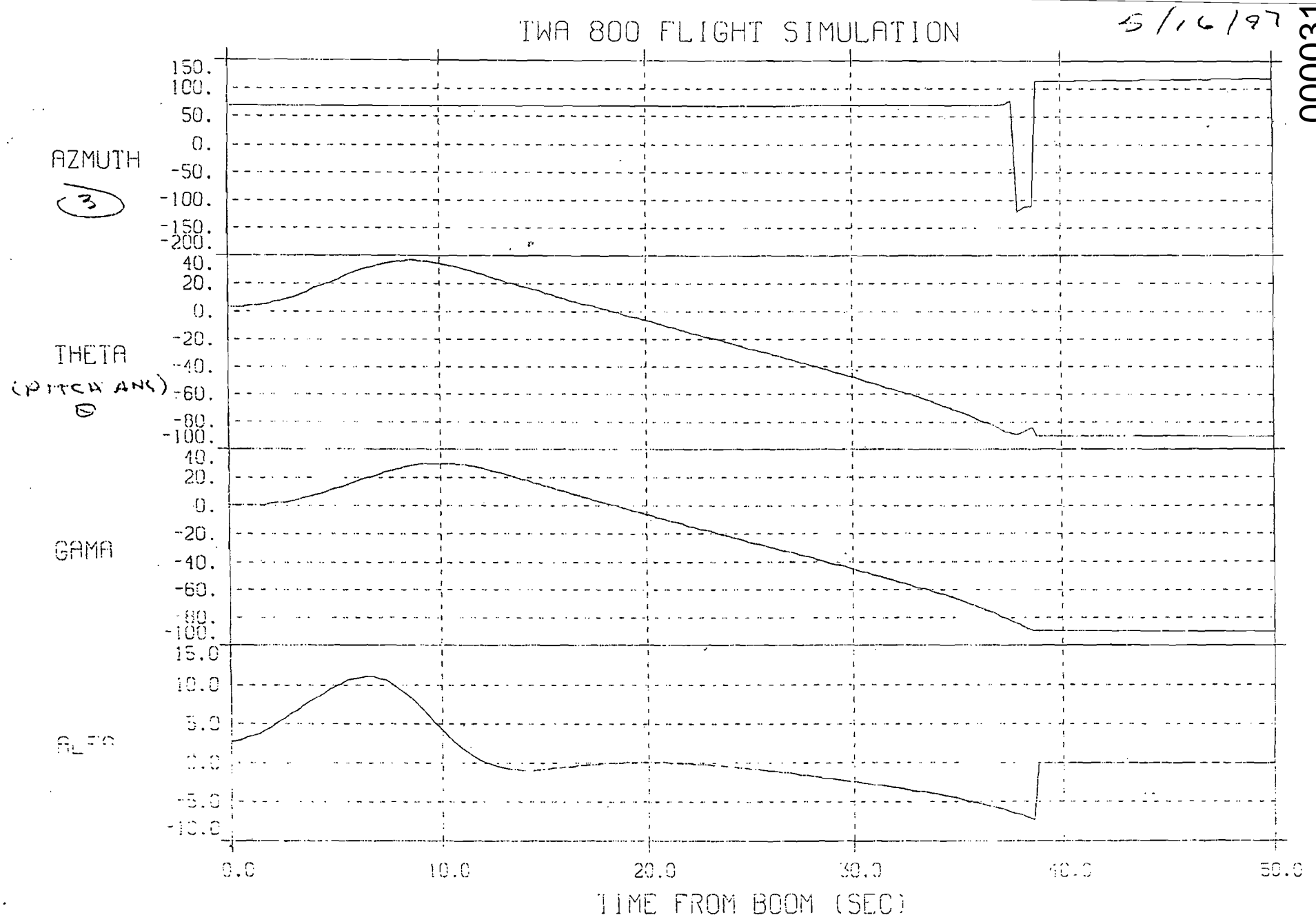
CG = 120.67

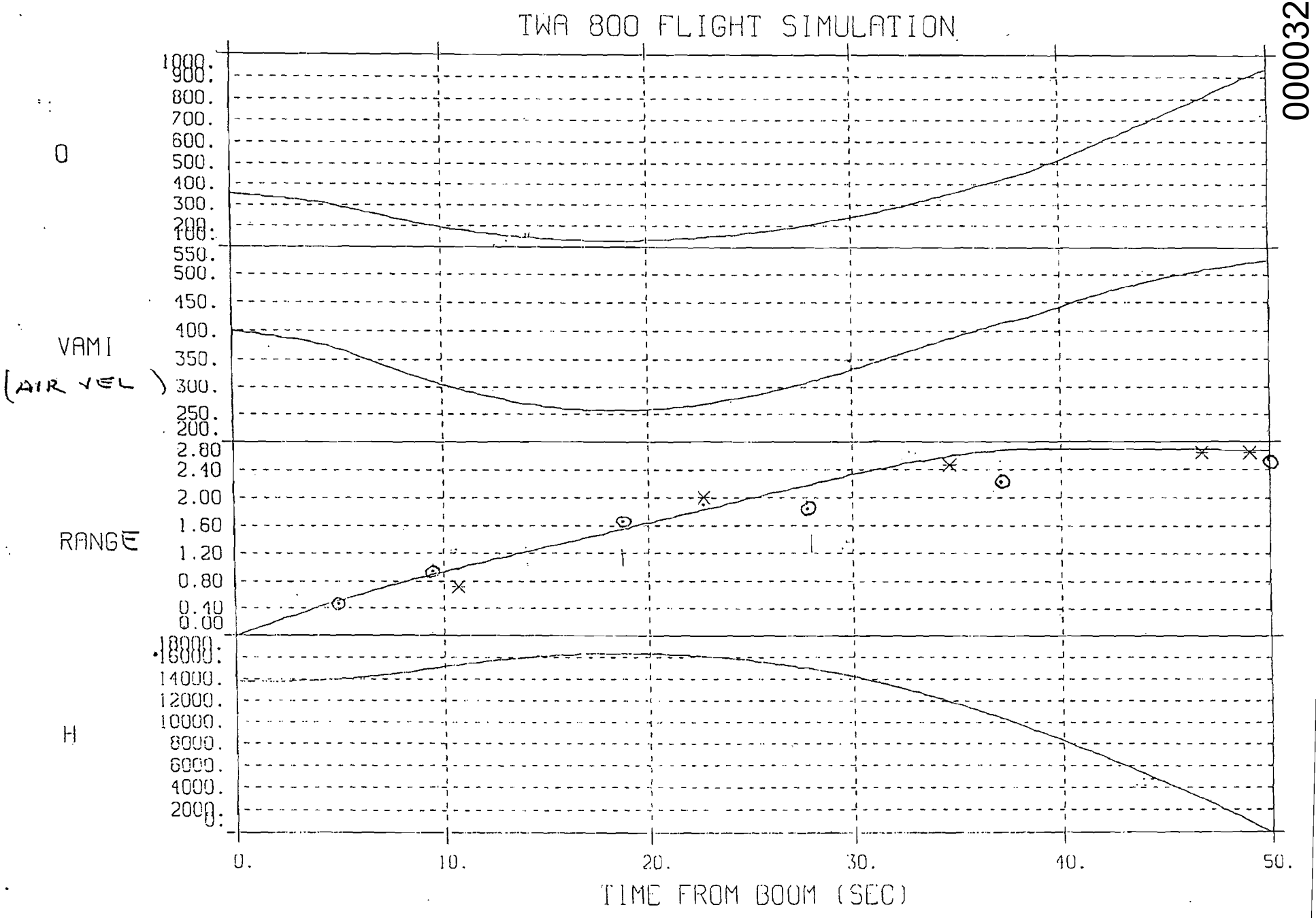
b = RB1 = 27.31

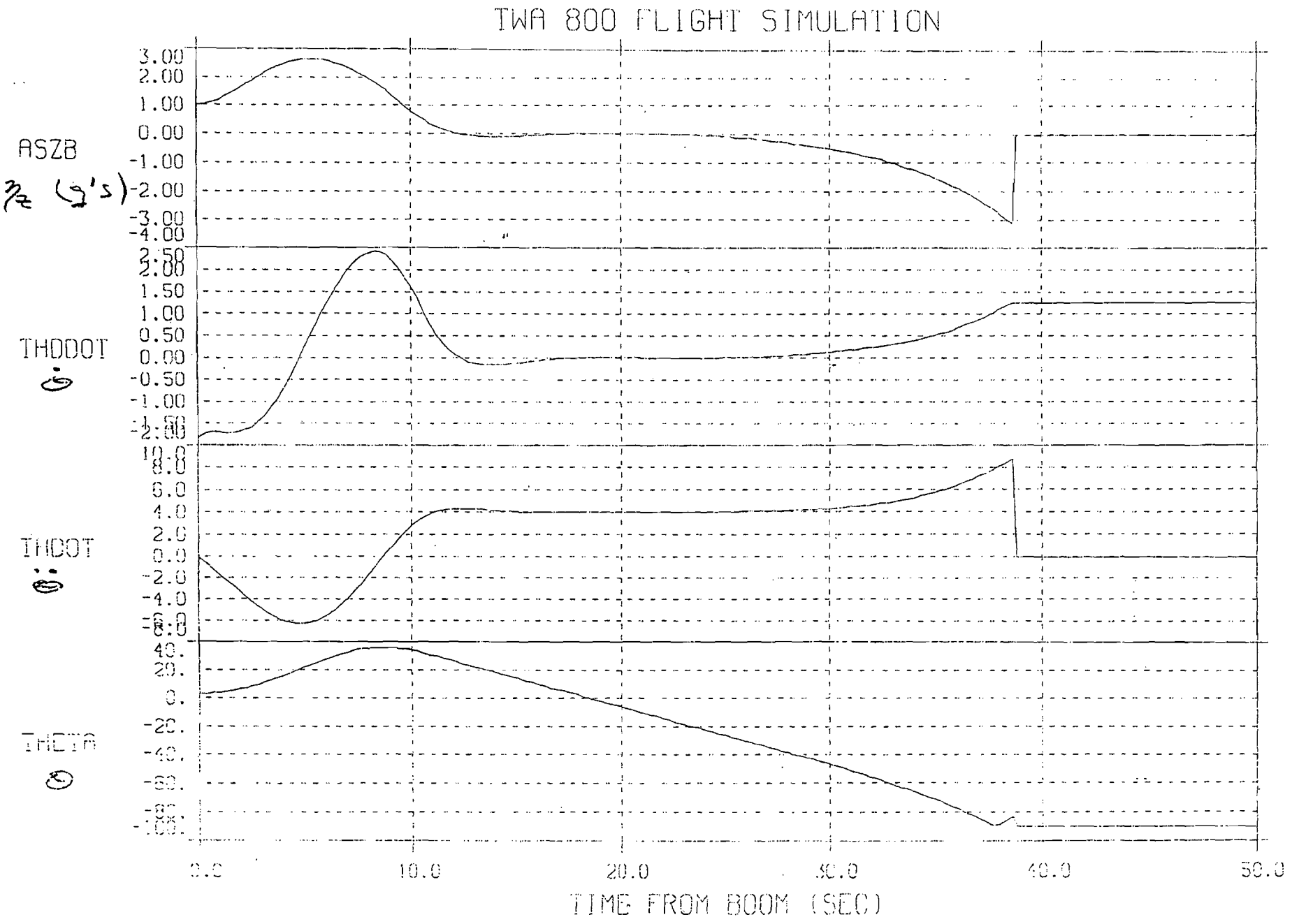
CP = ARG1T

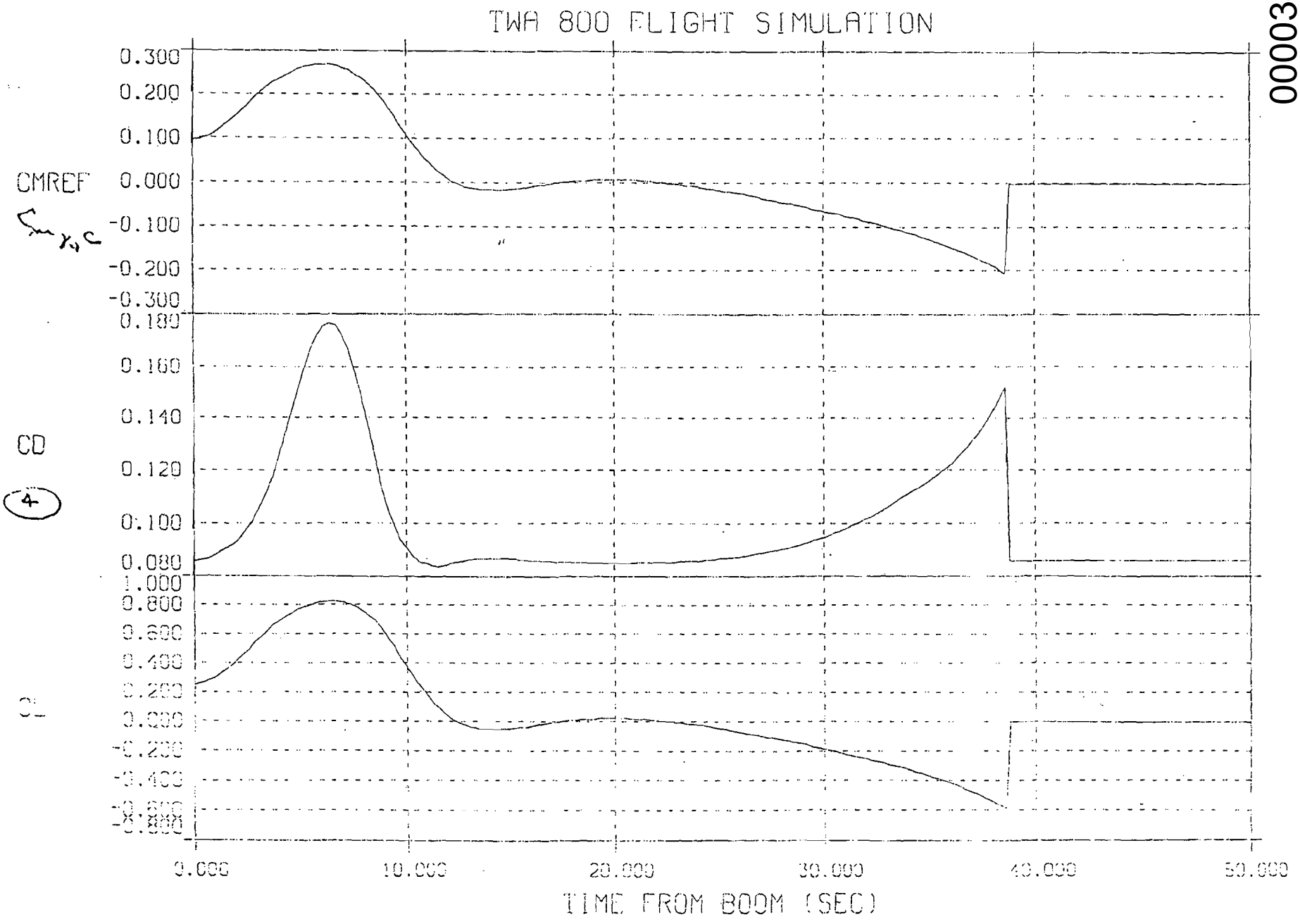
```
SERVM 13  A9C1  1.0          DA9V1  CM          DA9V3  CZ
SERVM 13  A9C2  -0.32956
PROPM  2 DIN    C            DLO    0
PROPM  2  WPI   200000.0
STRTM 13  IDW   294606.0
PROPM  2  DWT   1.0
PROPM  2I FTT   TC1    6
                -100.0              70620.0
                20000.0             70620.0
PROPM  2I DWT   TC1    6
                -100.0              10.0
                20000.0             10.0
STRTM  2I IXT   TC1    6
                 -100.0              1000000000.0
                 20000.0             1000000000.0
STRTM  2I IYT   TC1    6
                 -100.0              15780000.0
                 20000.0             15780000.0
STRTM  2I IZT   TC1    6
                 -100.0              1000000000.0
                 20000.0             1000000000.0
********H      FOLLOWING INPUTS CAUSE SWITCH TO BALLISTIC TRAJ  ********
********H      ARG3T IS BALLISTIC DRAG COEFFICIENT               ********
AERMM 15  CZ1T  0.0          CM1T  0.0
AERMM 15ICCX1T  1.0
SERVM 15  ARG2T 0.0          ARG3T 0.086         A2C1   0.0
SERVM 15  A1C1  0.0          A1C2  0.0           CMCMT  0.0
RMOTM 15 DHI    5            DIN    E            RMTF   1.
RMOTM 15  OMYB  0.
DPGXM 15 IGCF   1.
        C       0.0
```

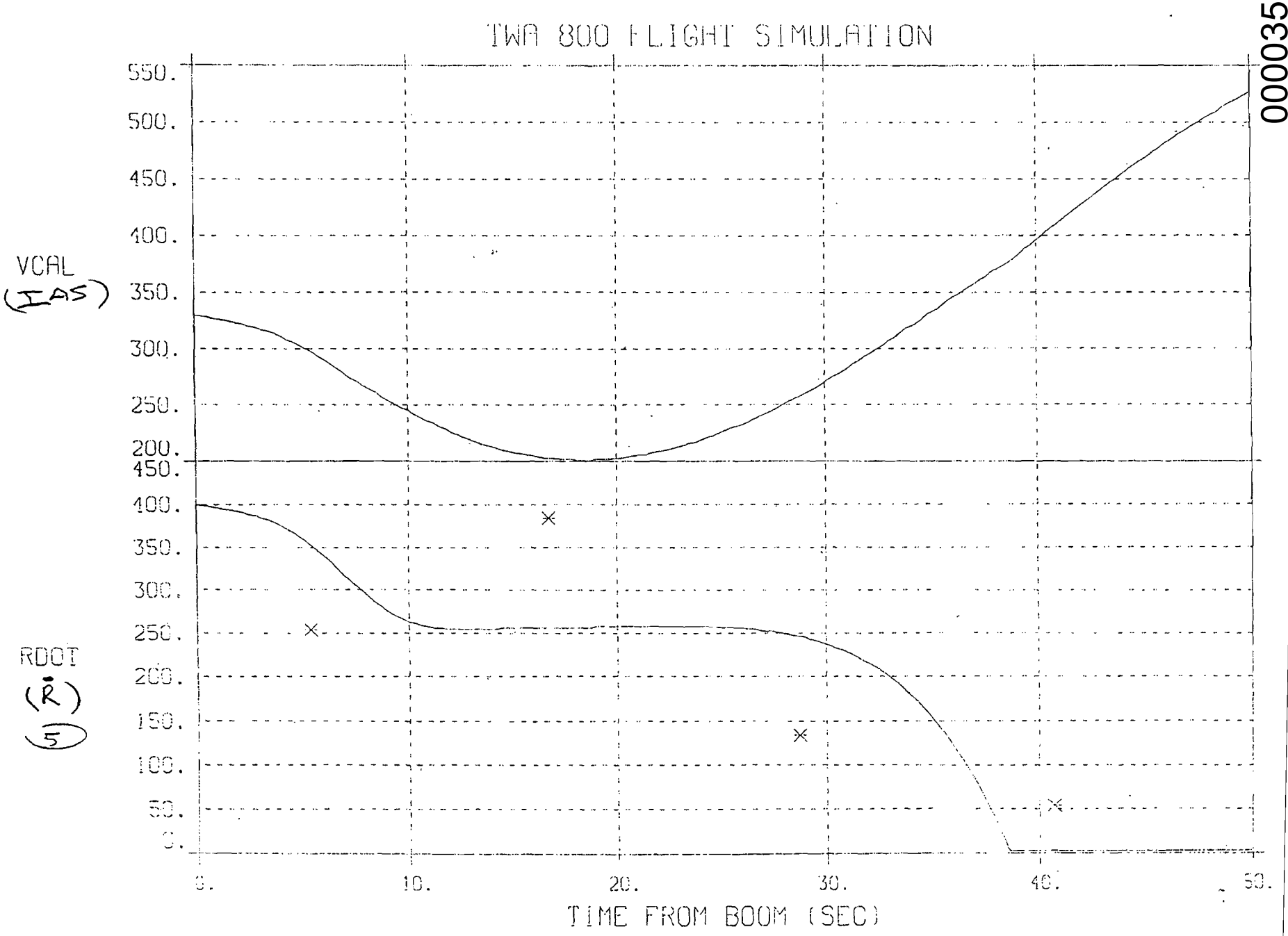
5/16/97

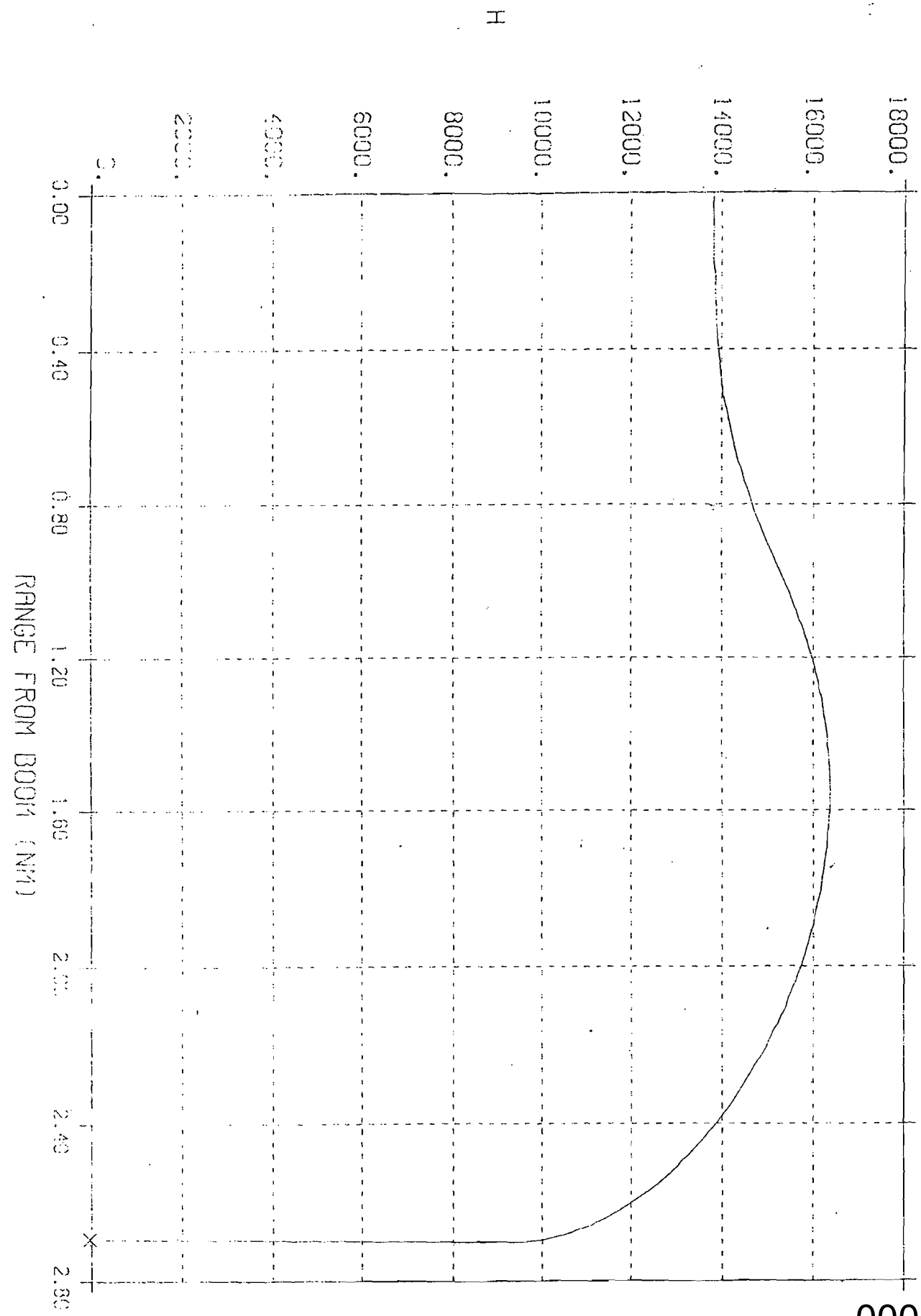


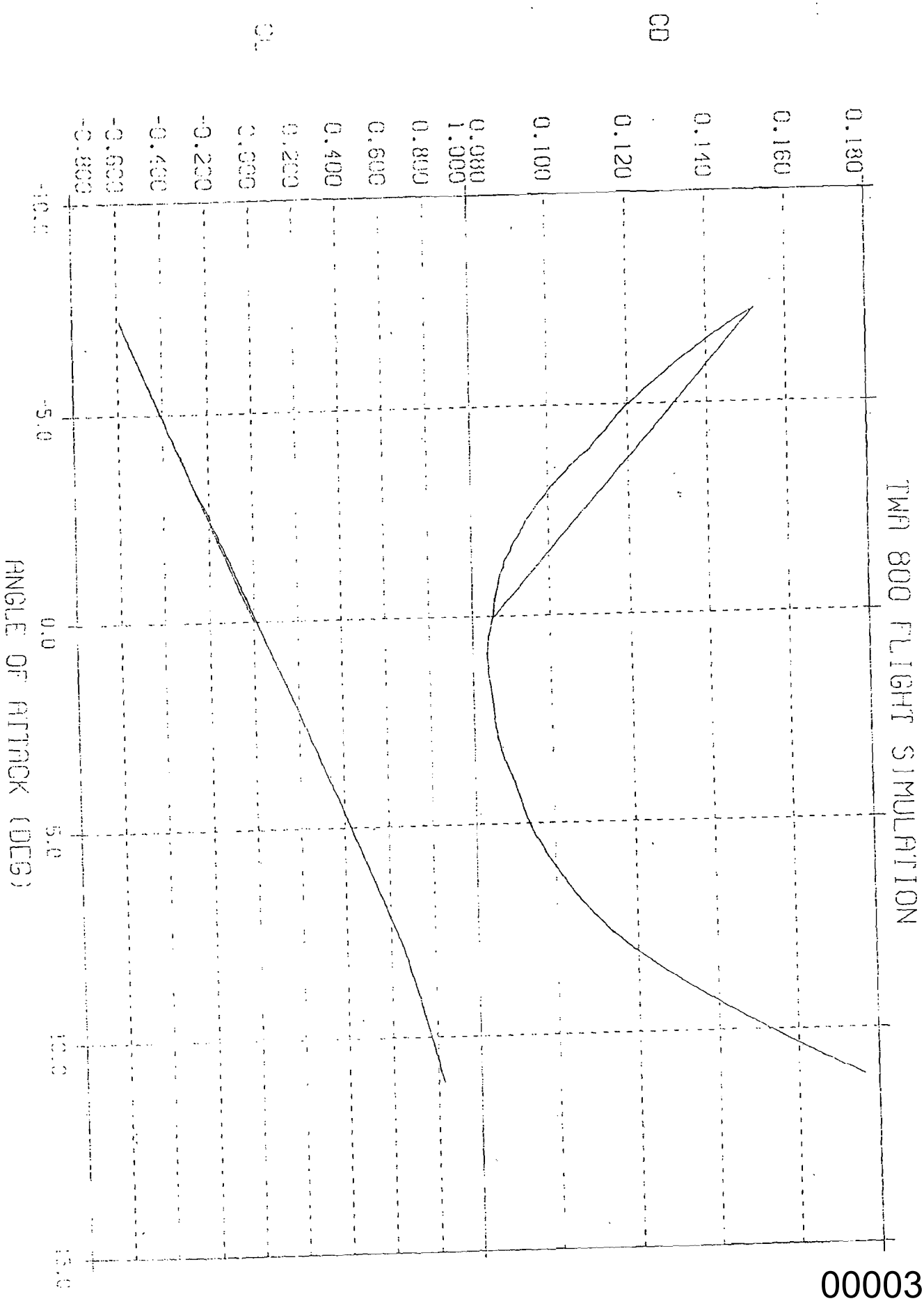


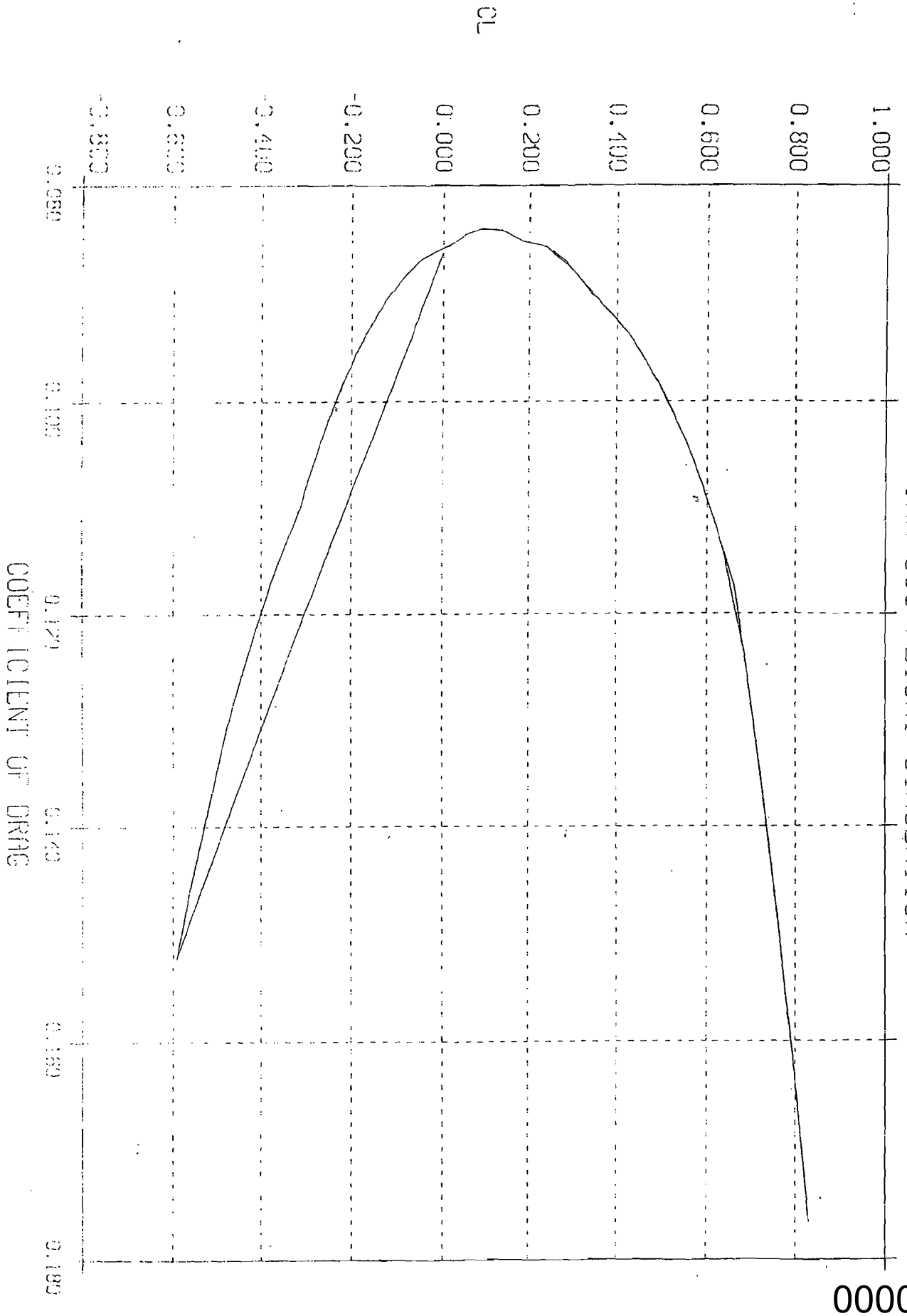












TILL
TWA 801

Δt	RADAR RANGE	R_{CALC}	ΔR
10.7	0.76	1.0	−0.24
22.7	2.05	1.84	−0.21
34.7	2.50	2.60	+0.10
46.7	2.69	2.69	0

$\Delta t = 49.9$ @ $R = 2.69$

$\Delta R_{AVG} = 0.137$

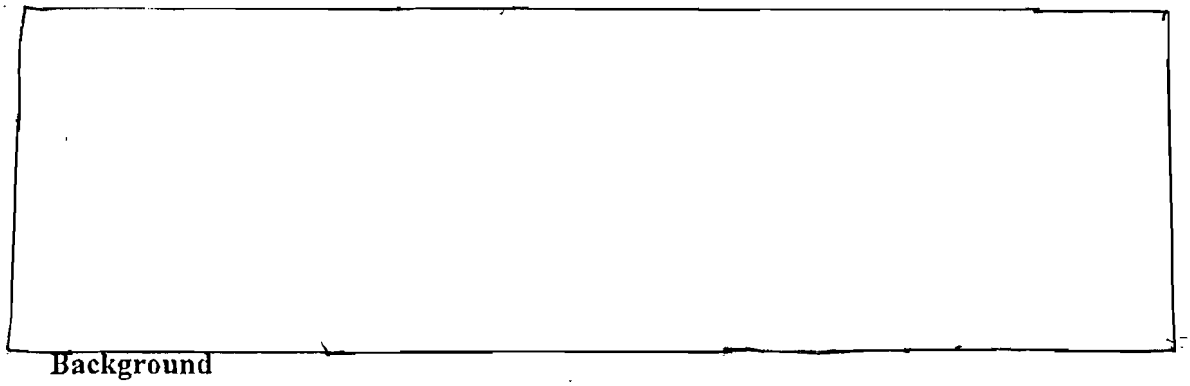
3 March 1998

Dynamic Flight Simulation

DRAFT

Summary and Conclusions

(b)(5)



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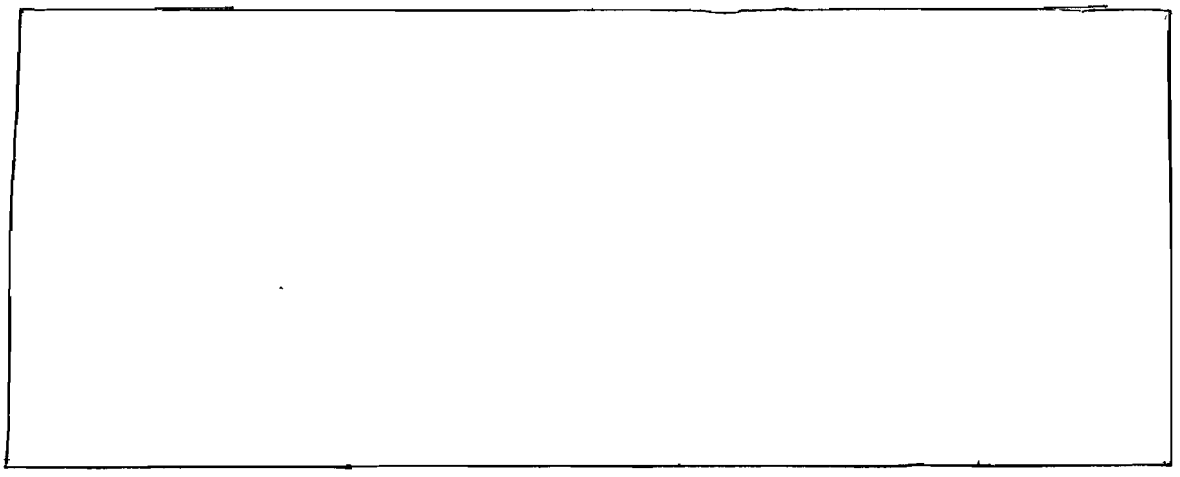
Background



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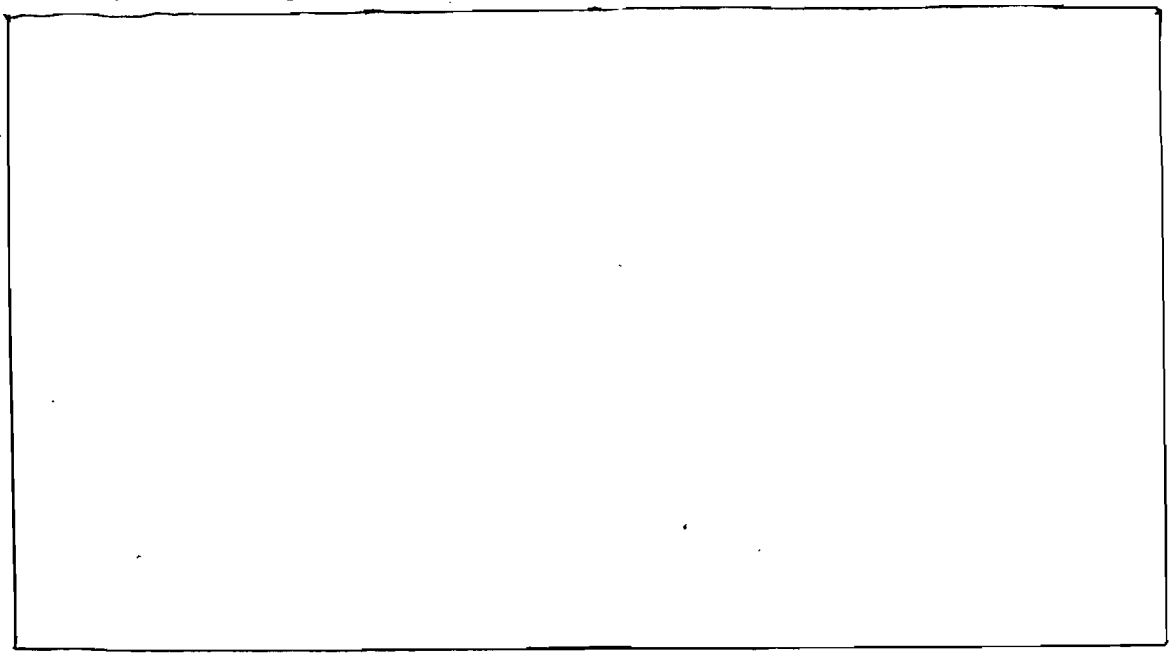
Aerodynamics and physical properties



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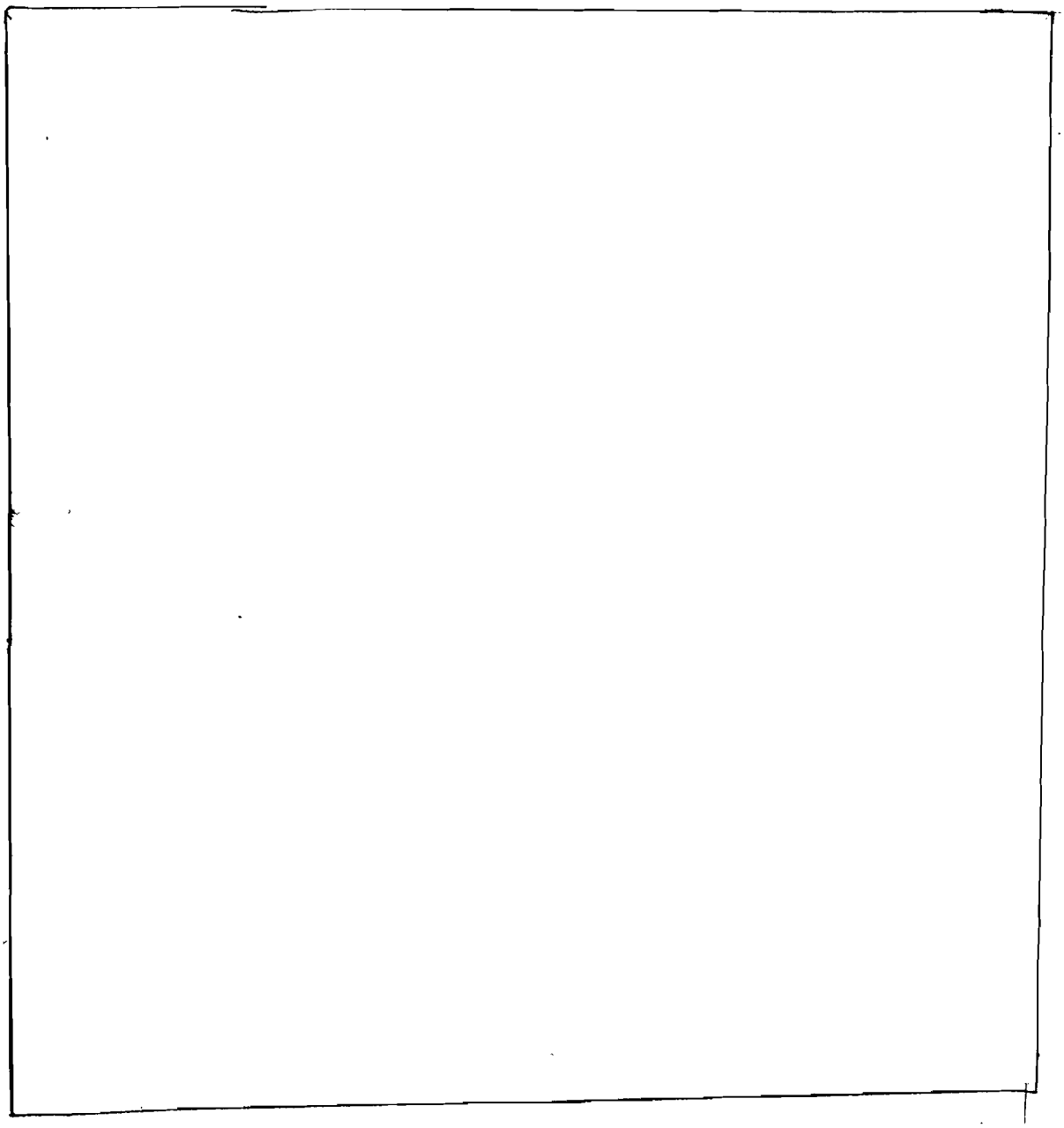

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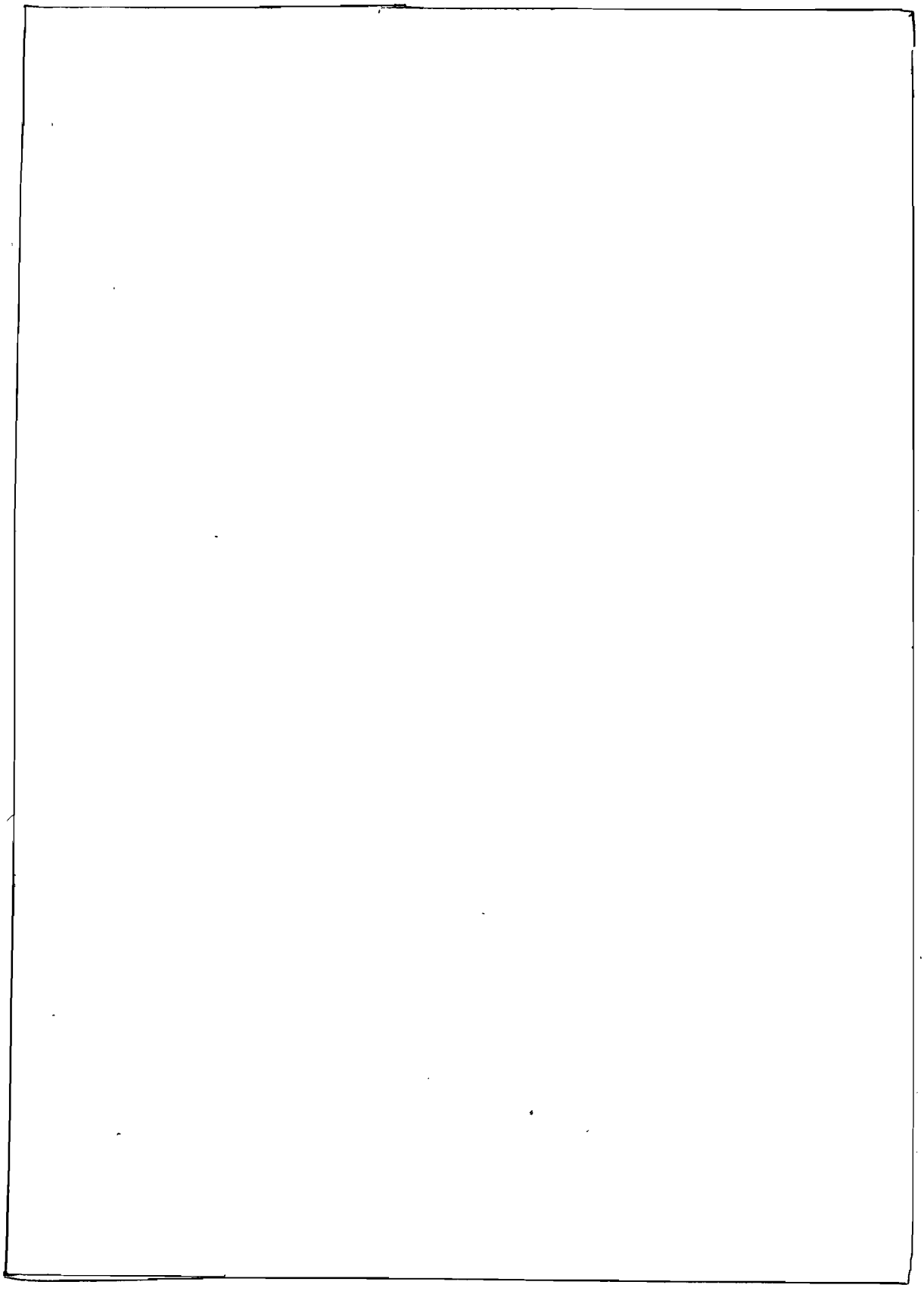

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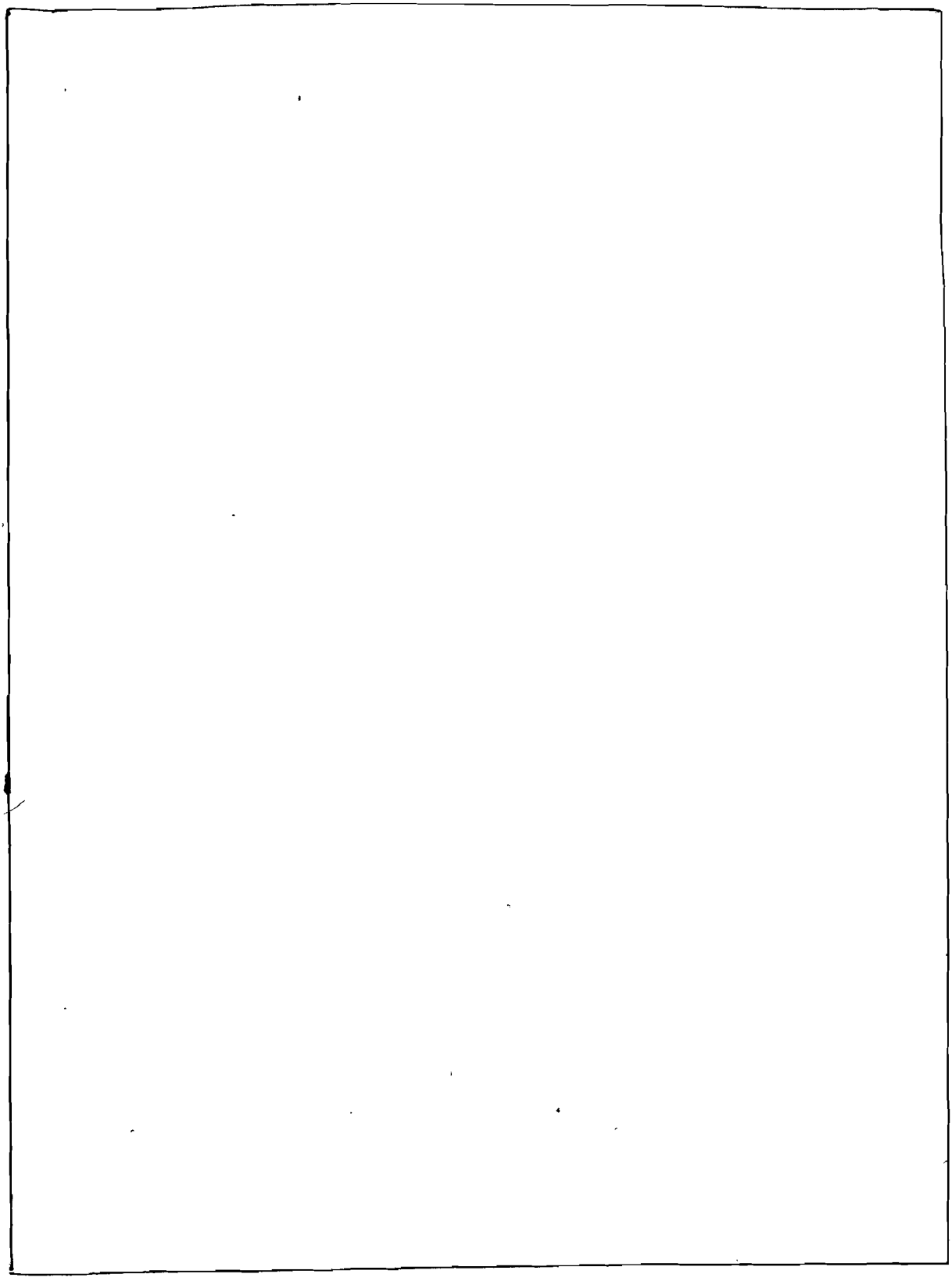

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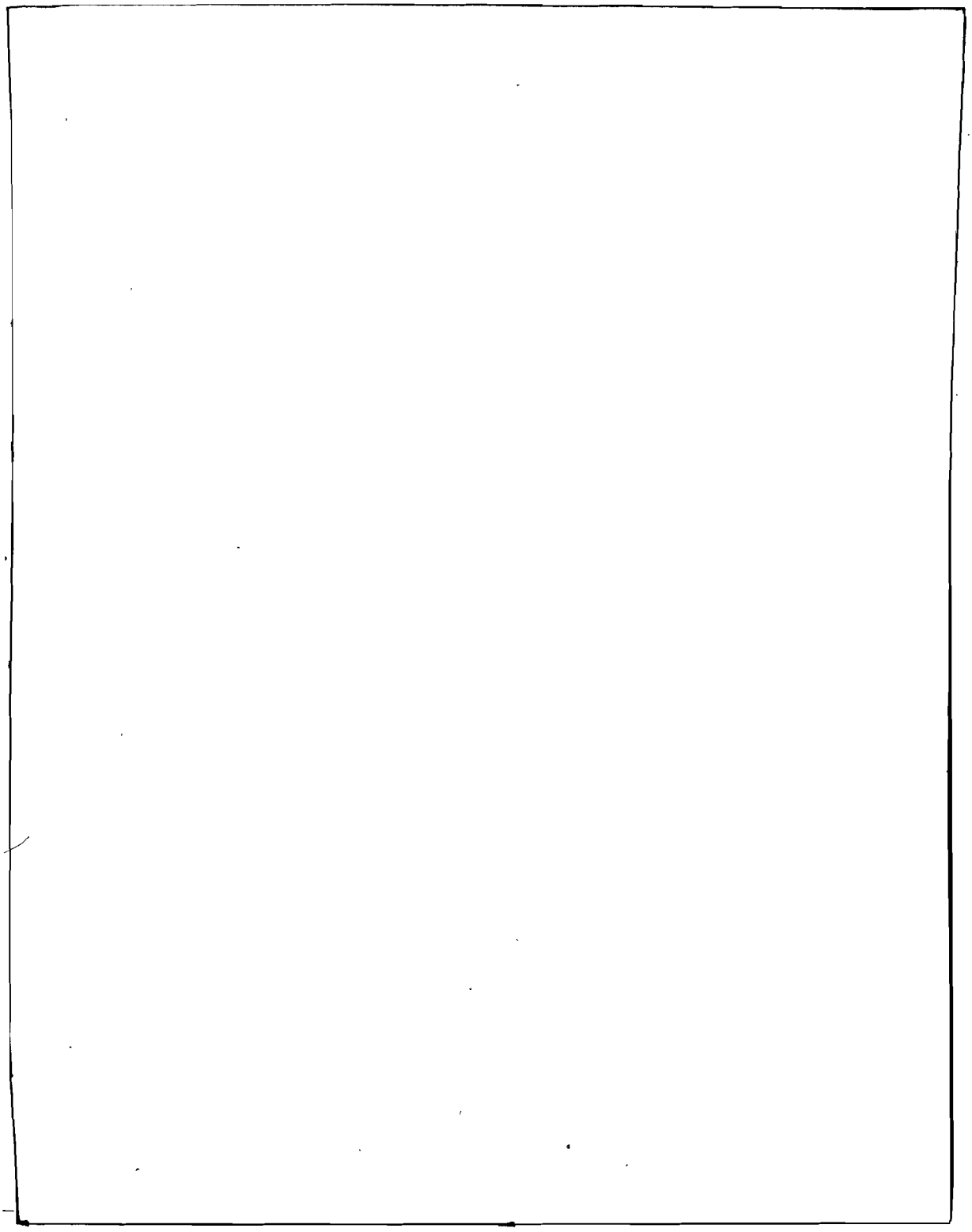

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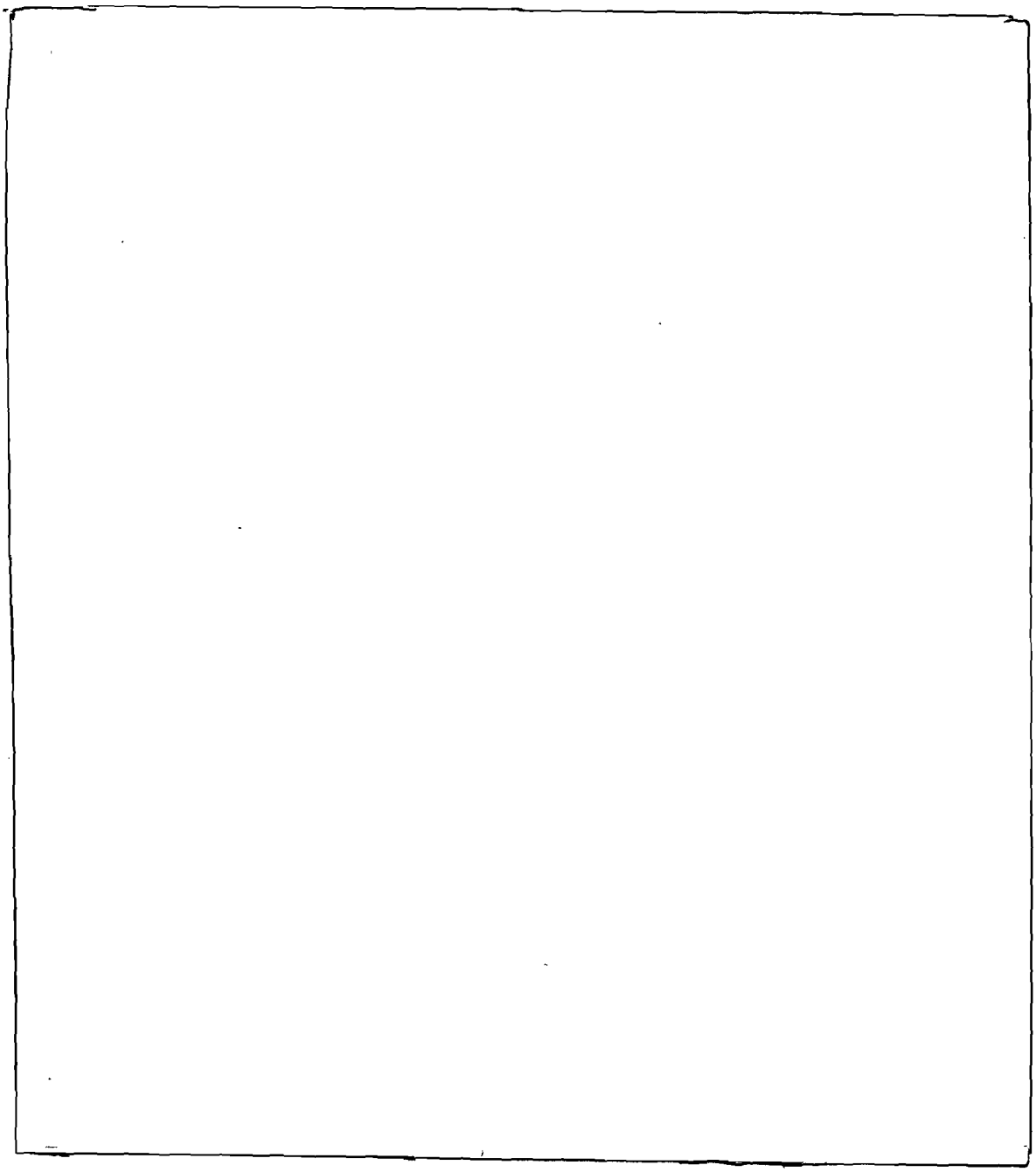
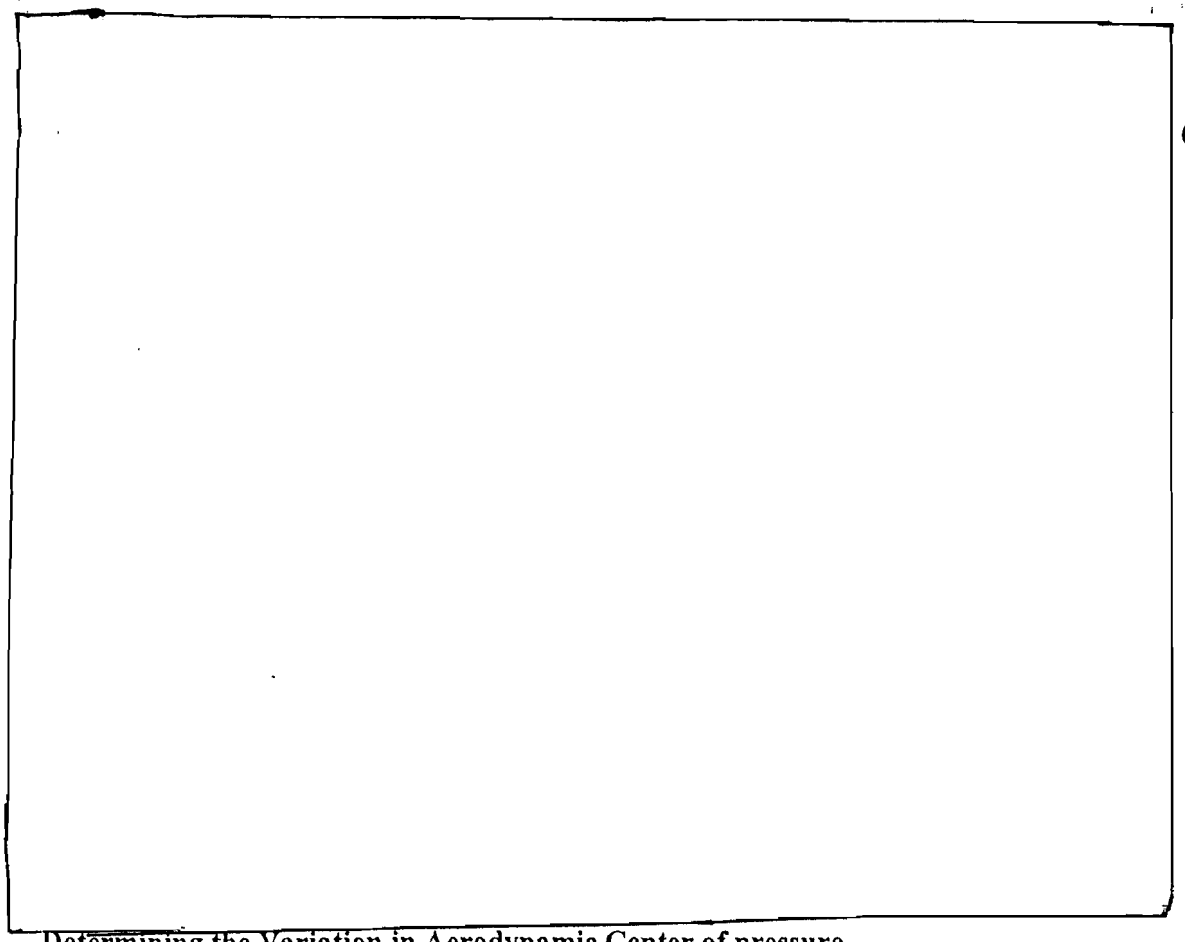
Calculated Flight Dynamics



(b)(5)

Approach Adapted to Insure Reasonable Results.

(b)(5)



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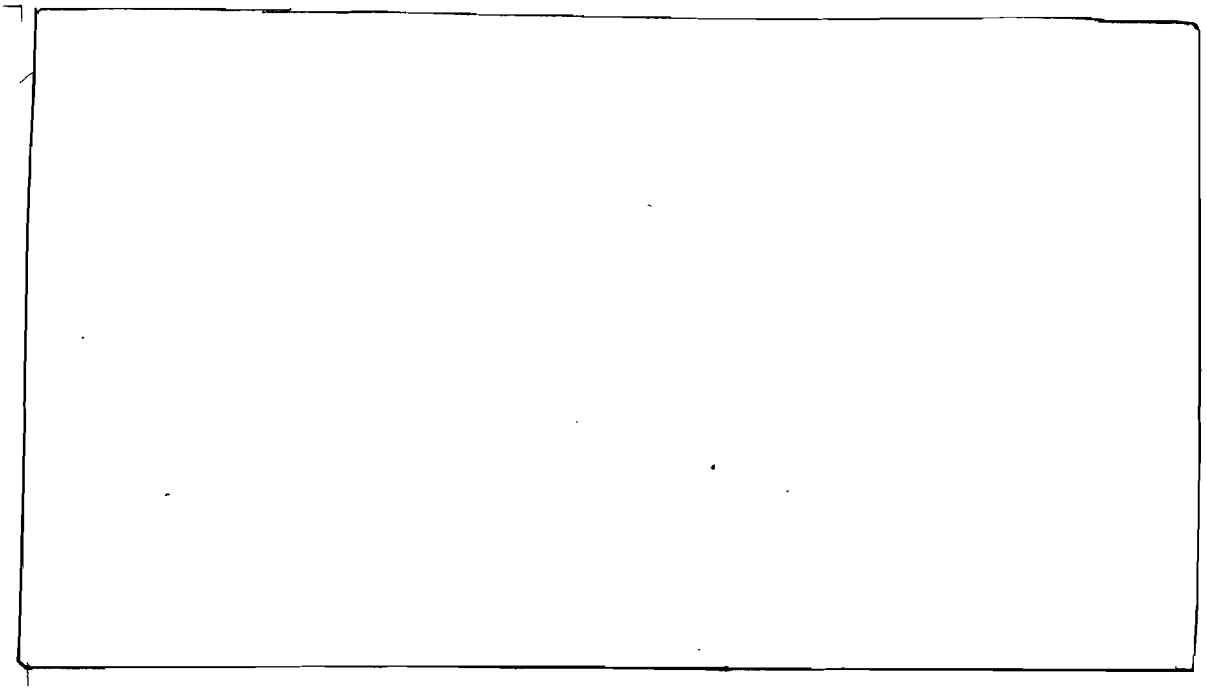
Determining the Variation in Aerodynamic Center of pressure



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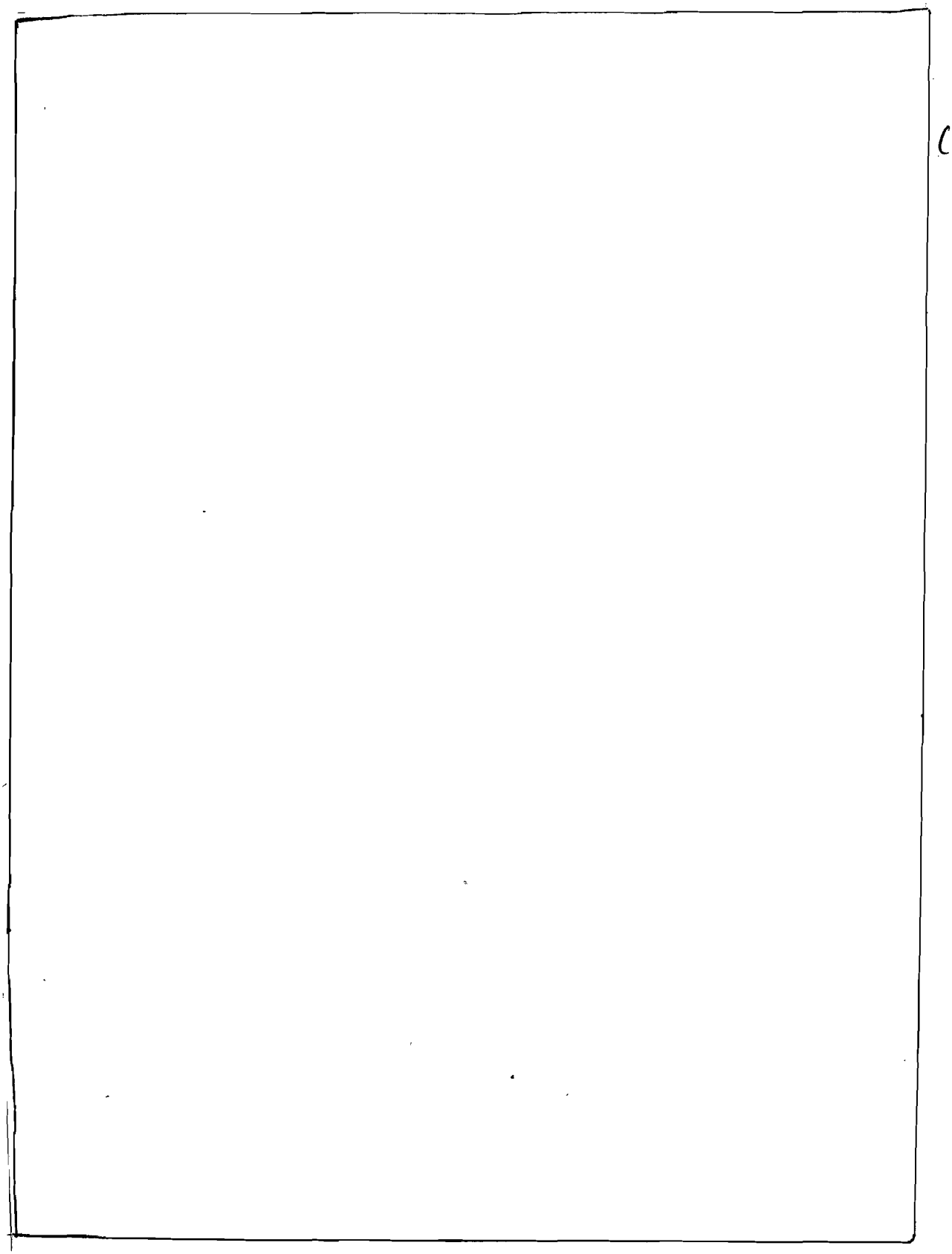

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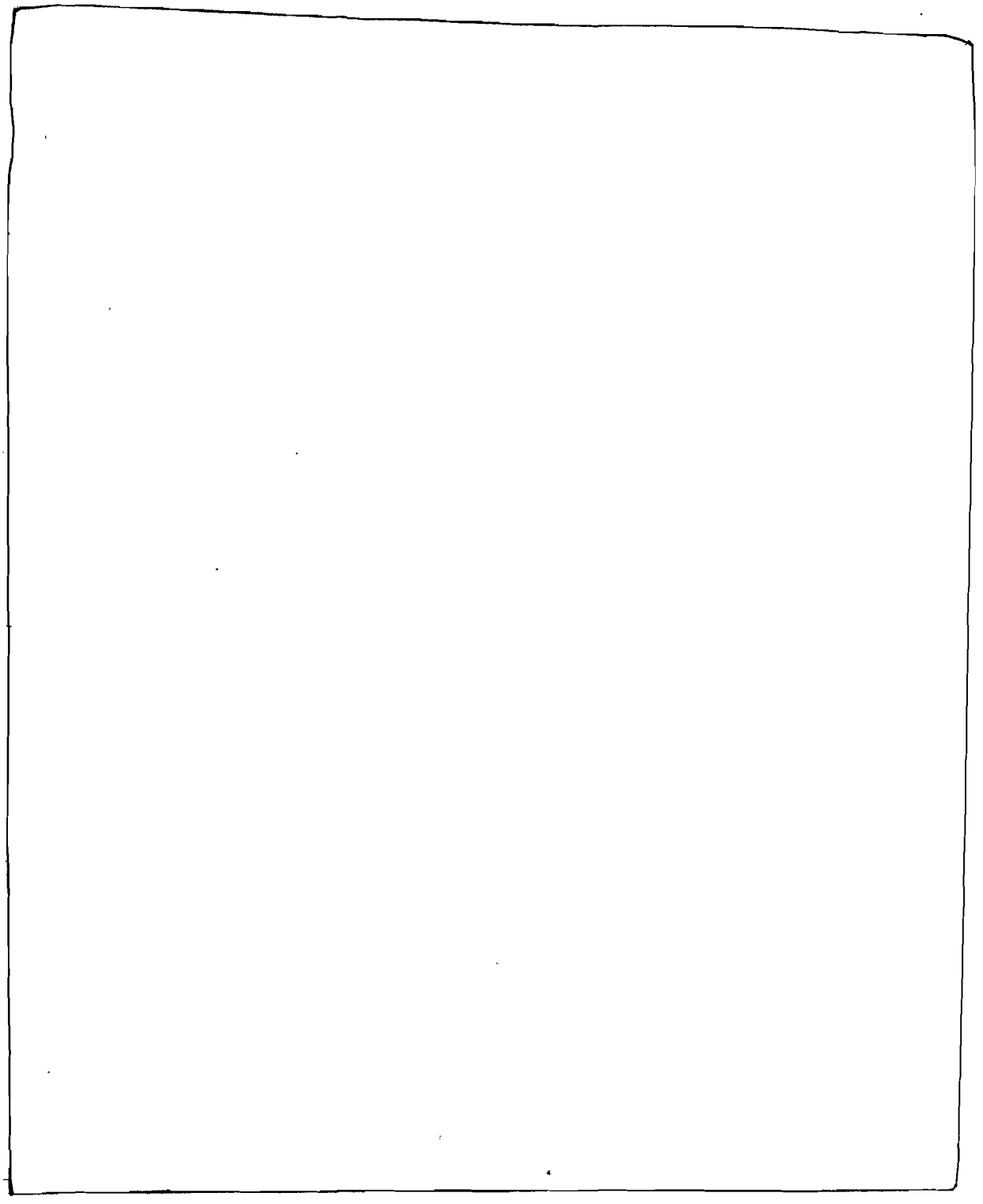


(b)(5)

Shown to NTSB
but never finalized

DRAFT 2

17 March 1998

Analysis of Radar Tracking of the TWA 800 Disaster on July 17, 1996

Summary and Conclusions

[redacted]

(b)(5)

[redacted] (b)(5)

Background

[redacted] (b)(5)

Description of Radar Data

[redacted] (b)(5)

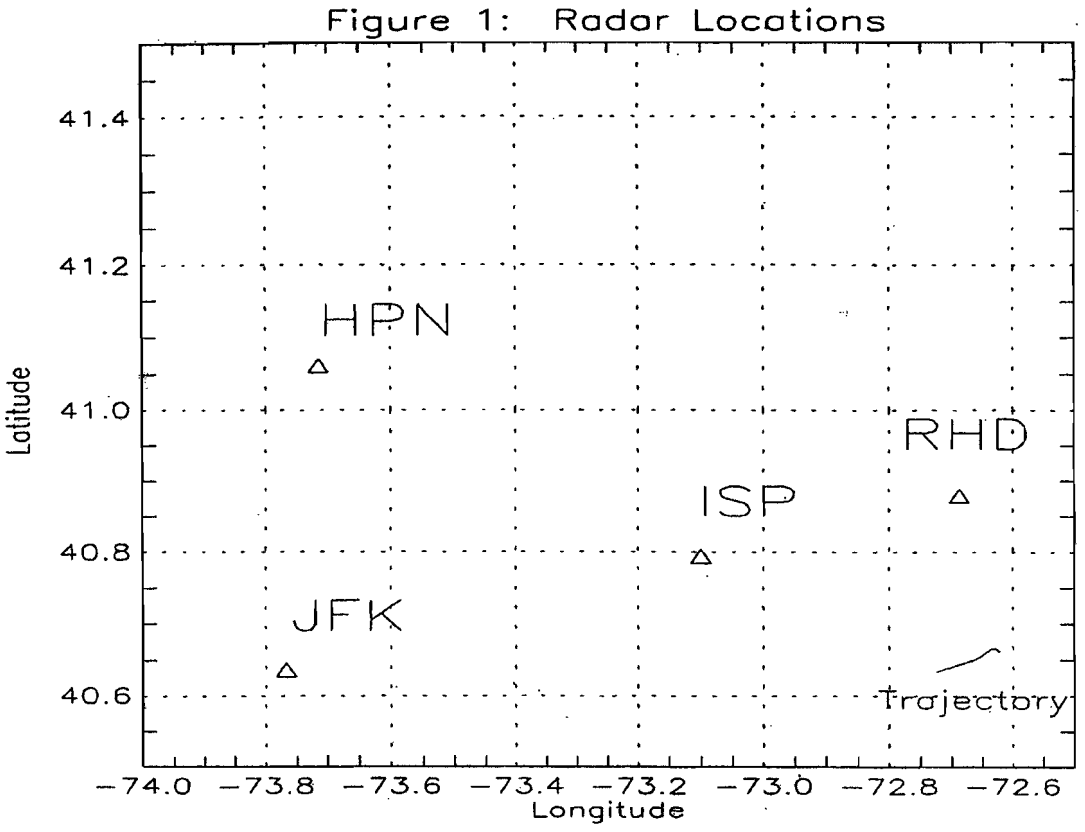
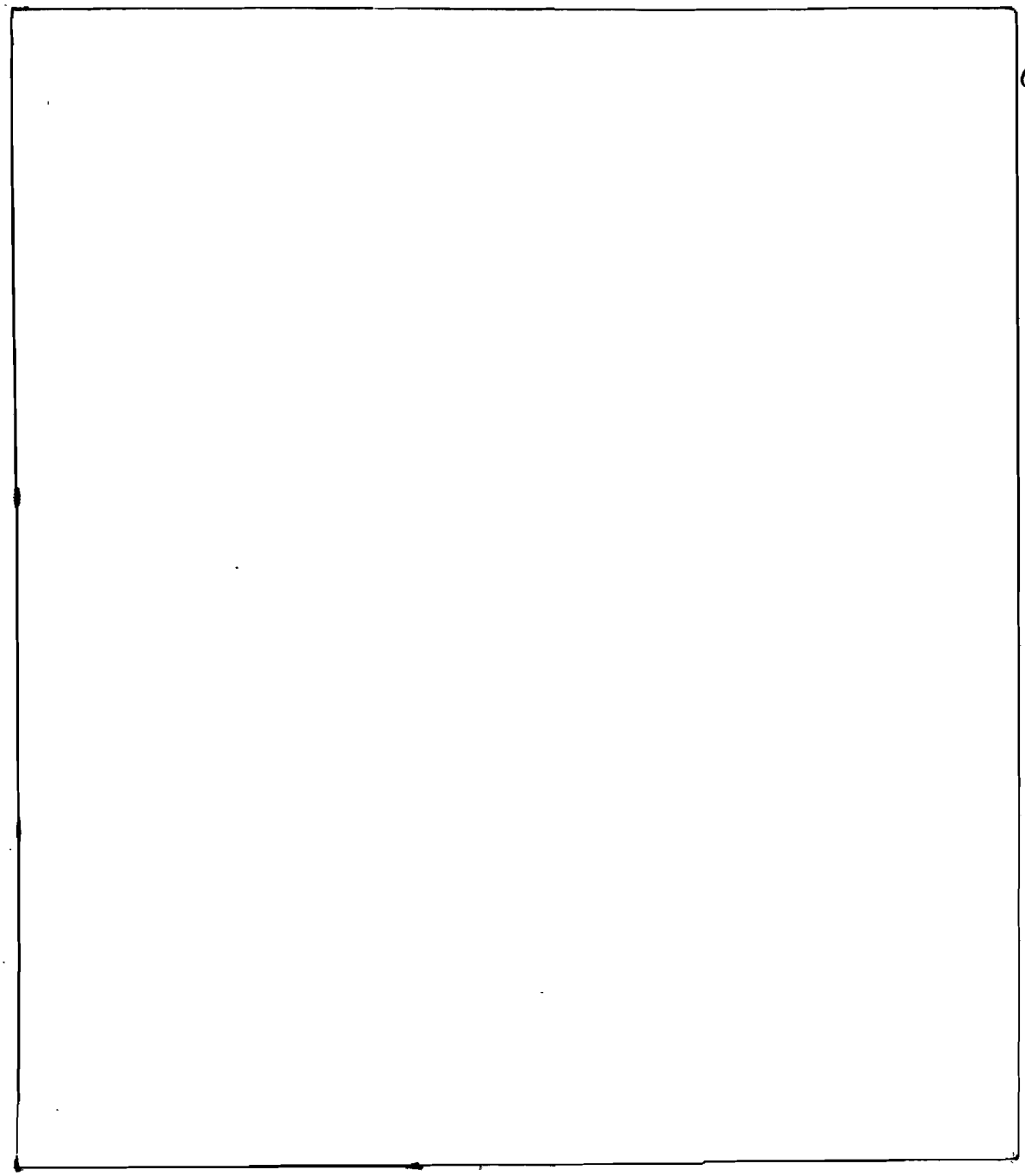


Figure 1: Locations of the four radars used in this analysis. TWA Flight 800 took off from JFK International, exploded about 50 nm east of JFK, and impacted in the water after flying about 2.5 nm farther. A segment of the flight path from 24 seconds before the explosion to impact is shown in the lower right of the map.

Main Object Identification

(b)(5)



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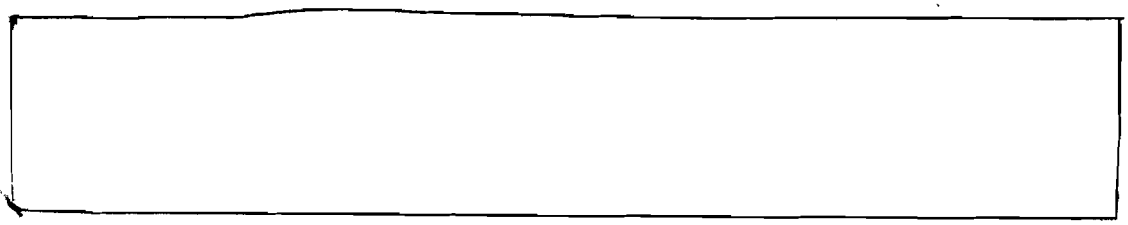
Data Adjustments



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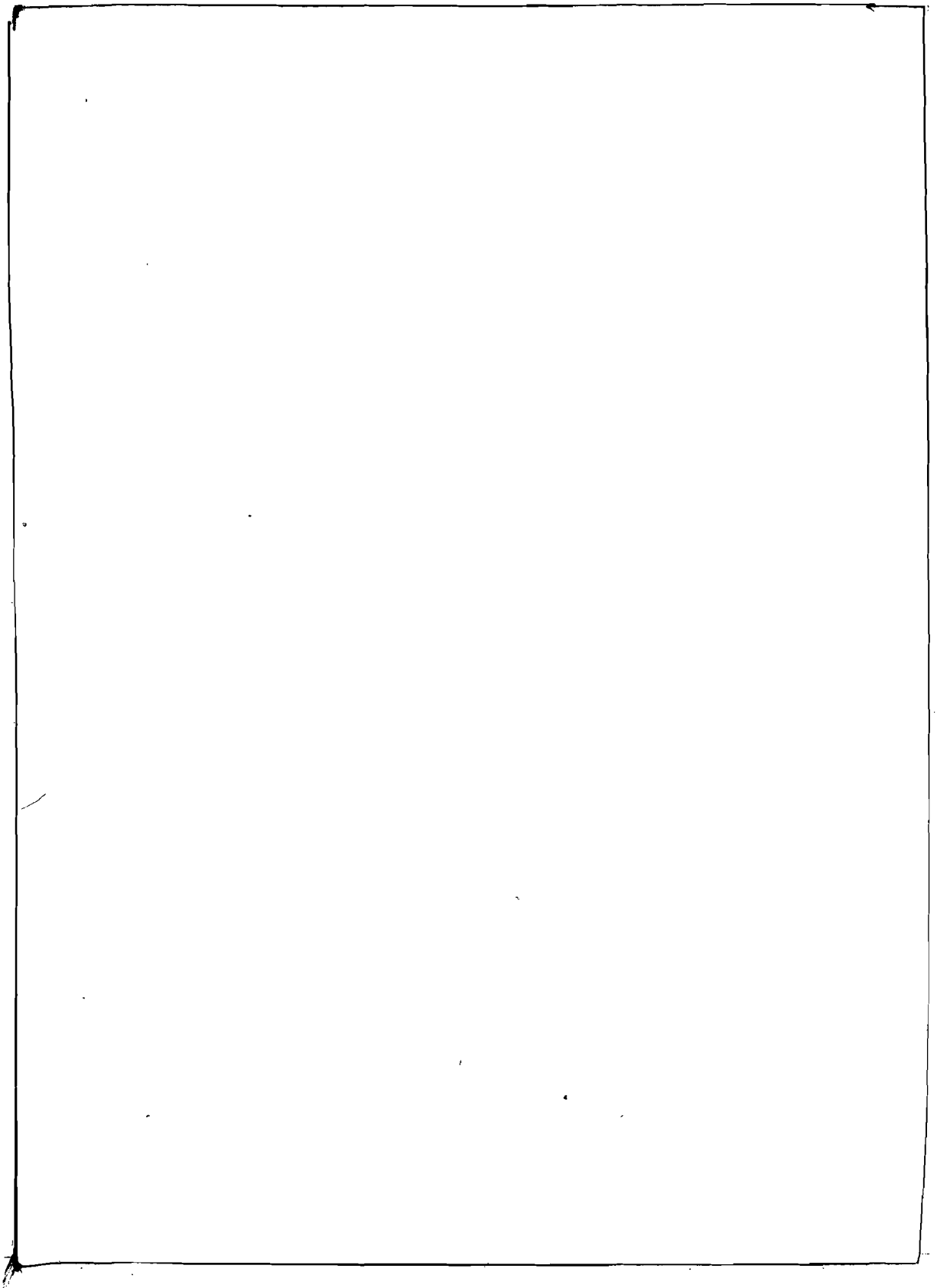


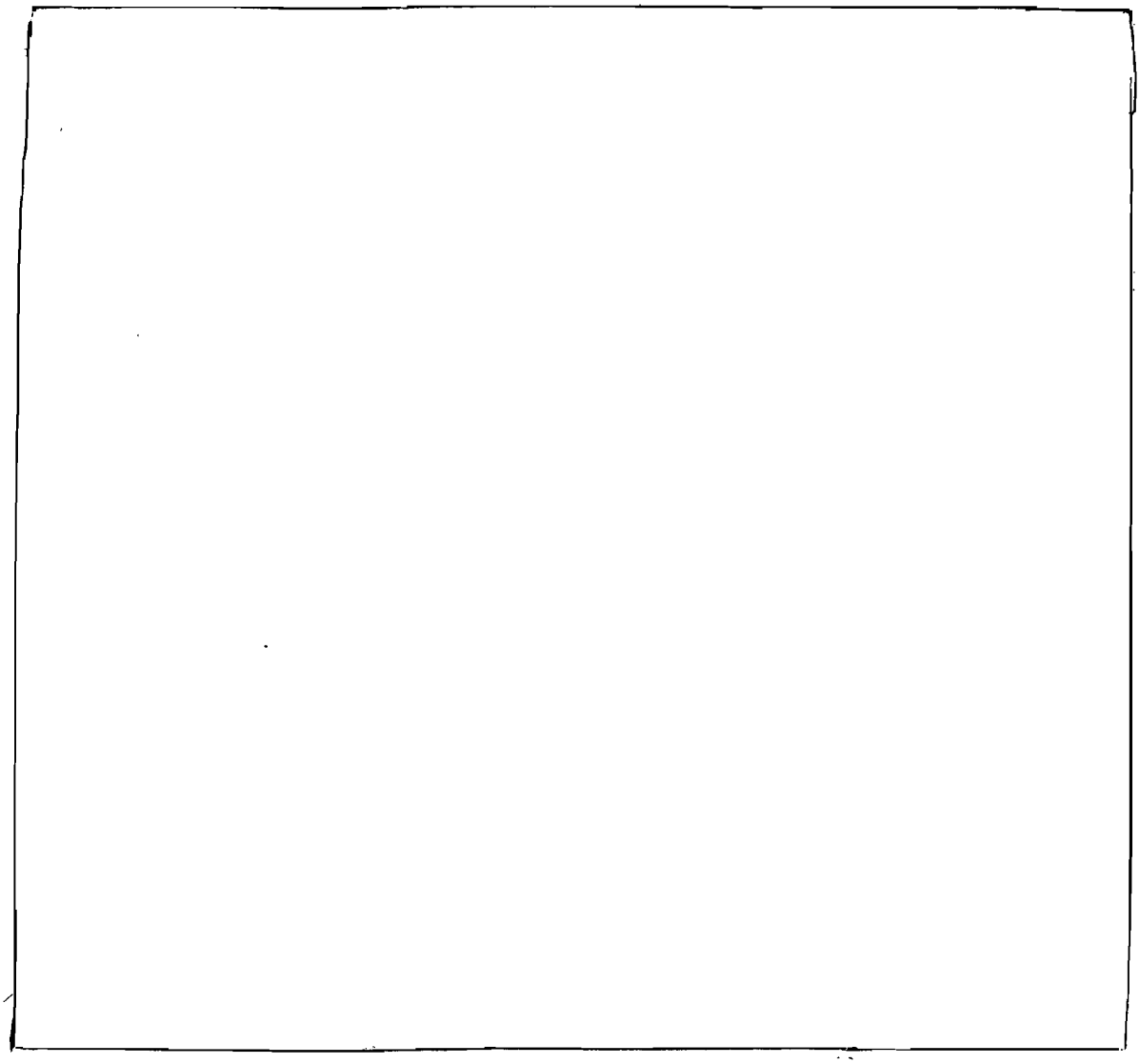
(b)(5)

Possible Data Corruption

(b)(5)

Description of Fitting Algorithm

(b)(5)



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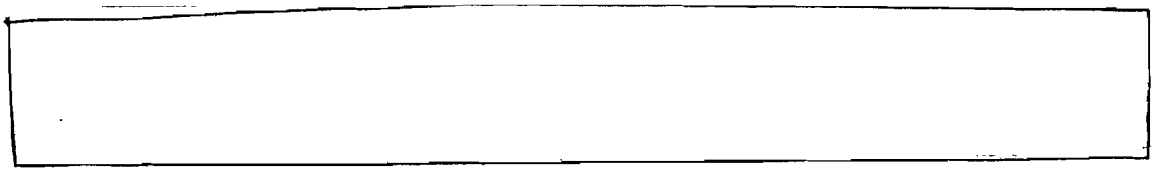
Accuracy of the Fit To the Data



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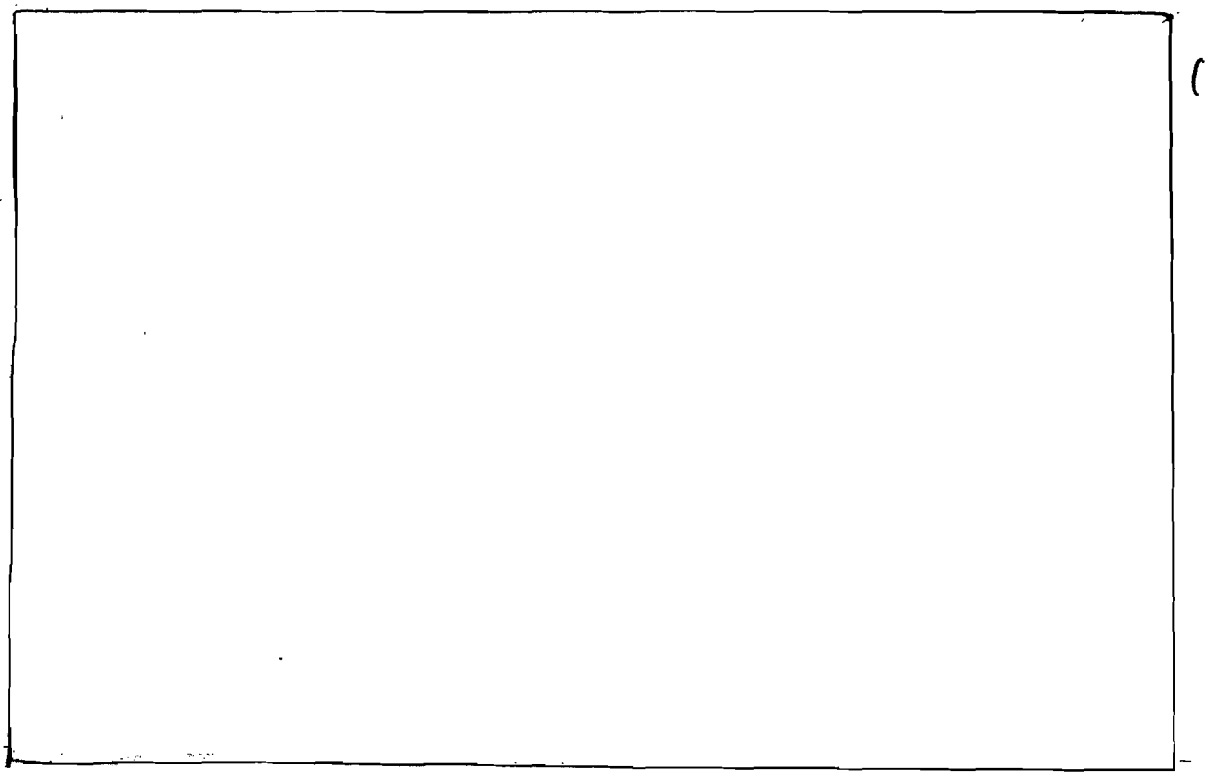
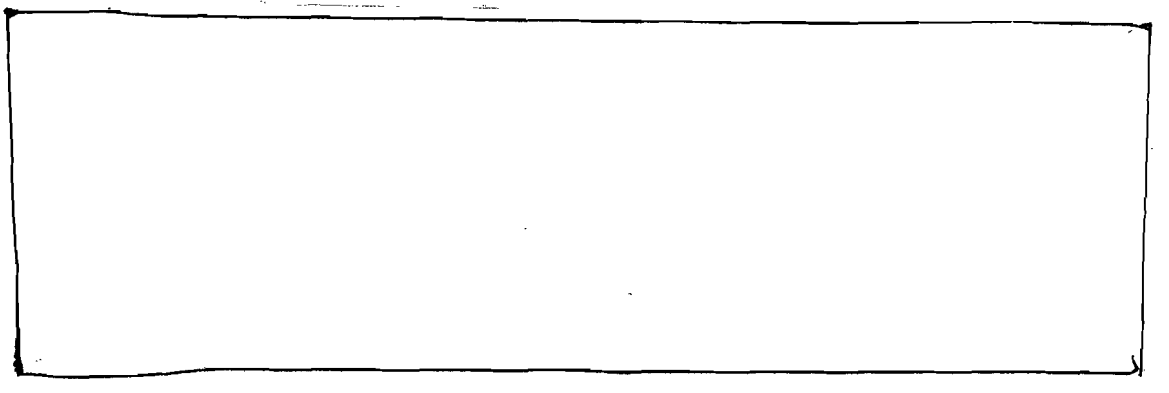


(b)(5)

Data Editing



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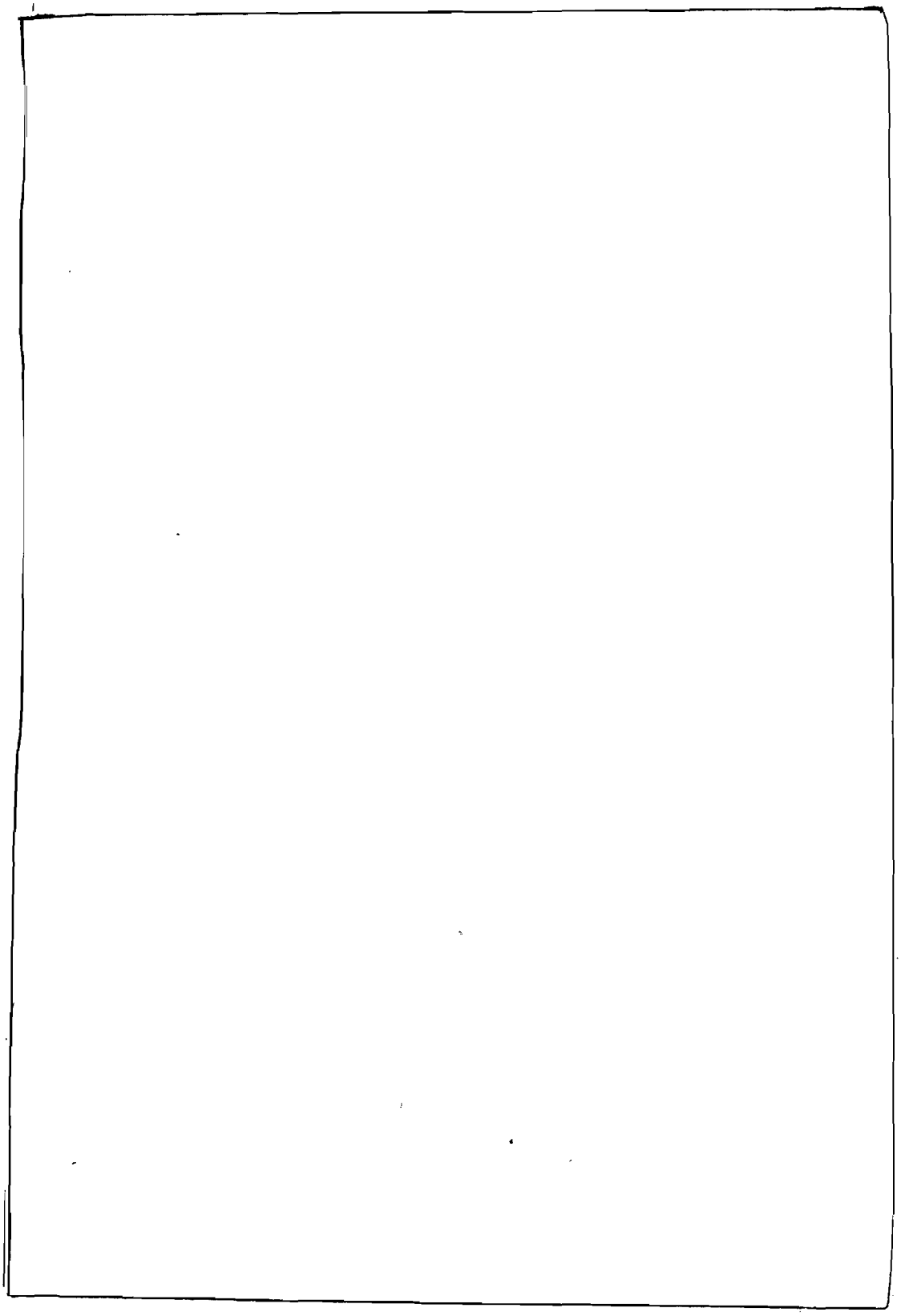

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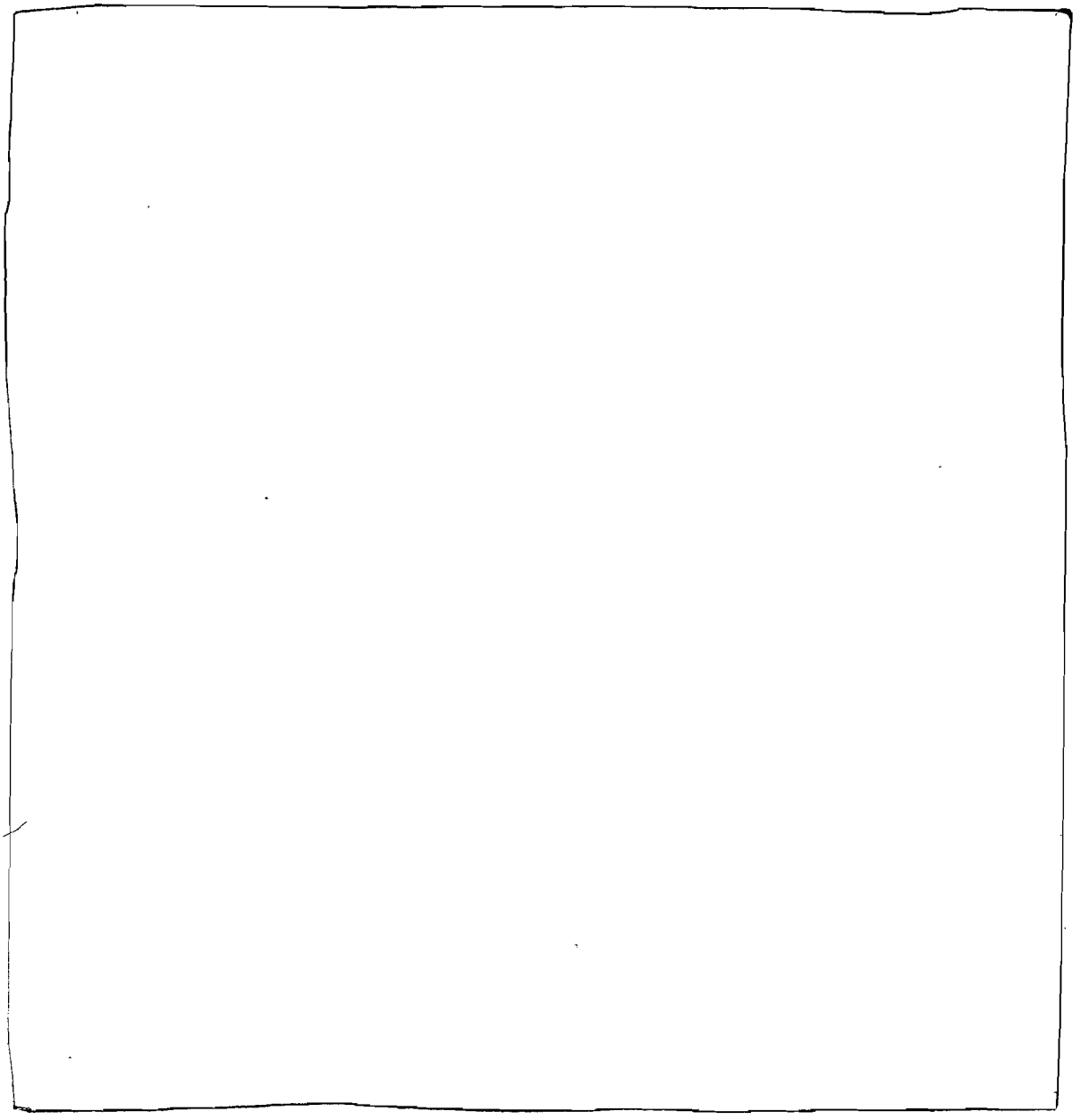
Calculated Flight Path



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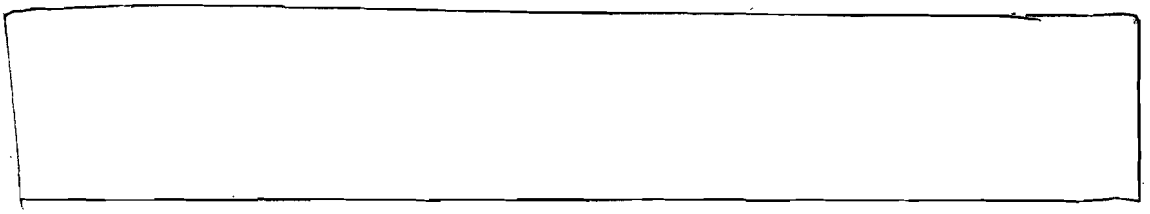
Discussion of the Results



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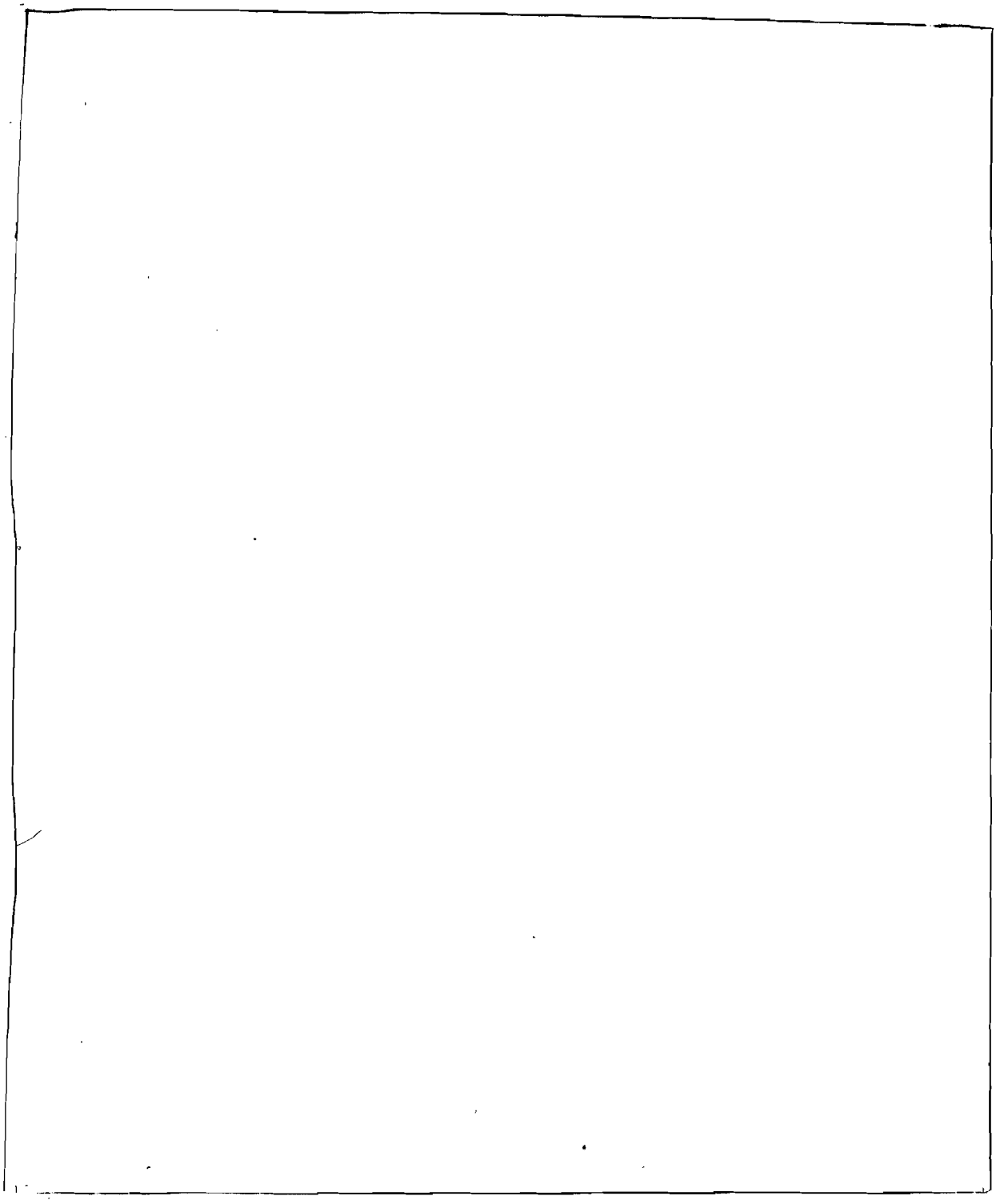

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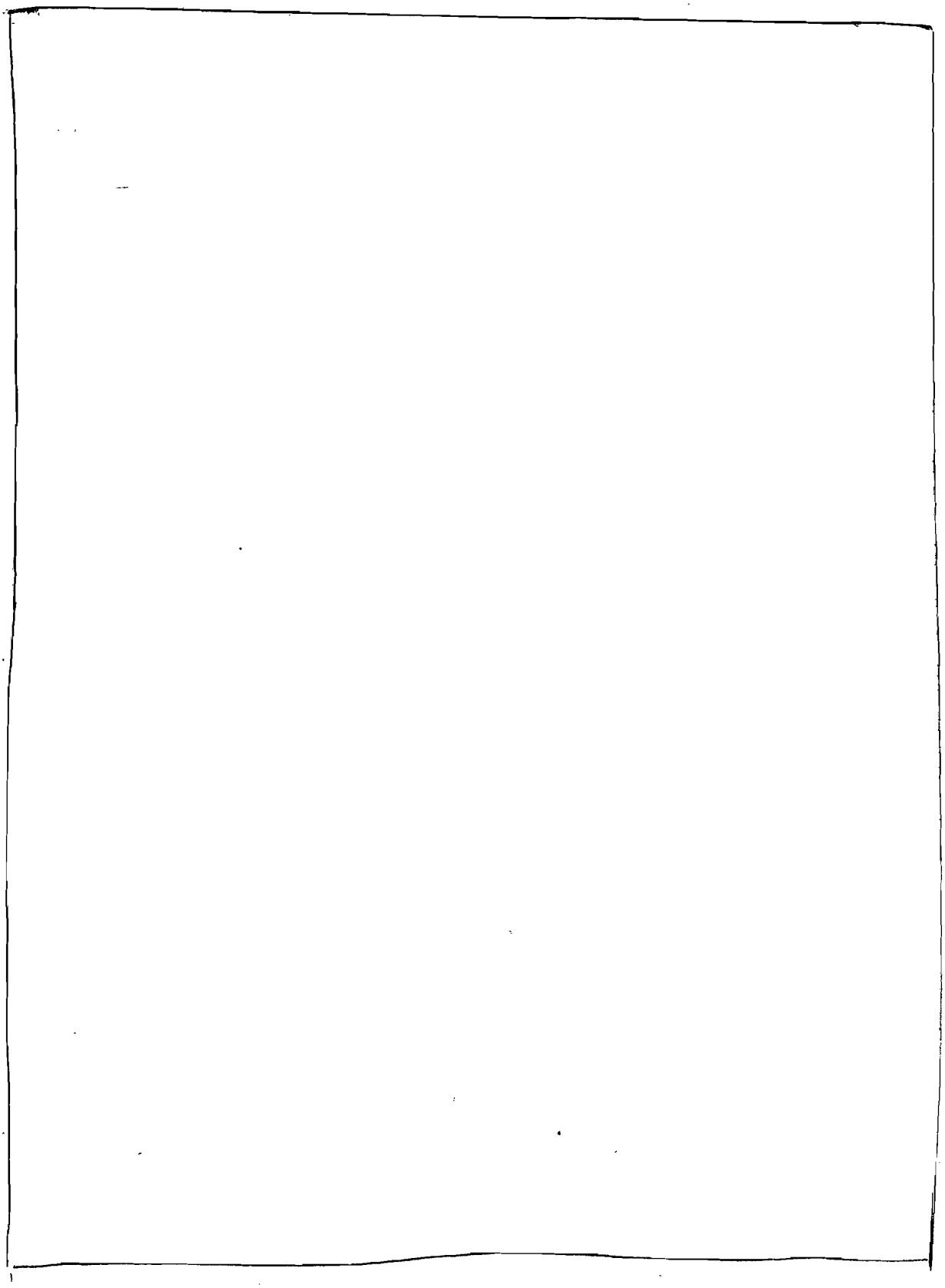

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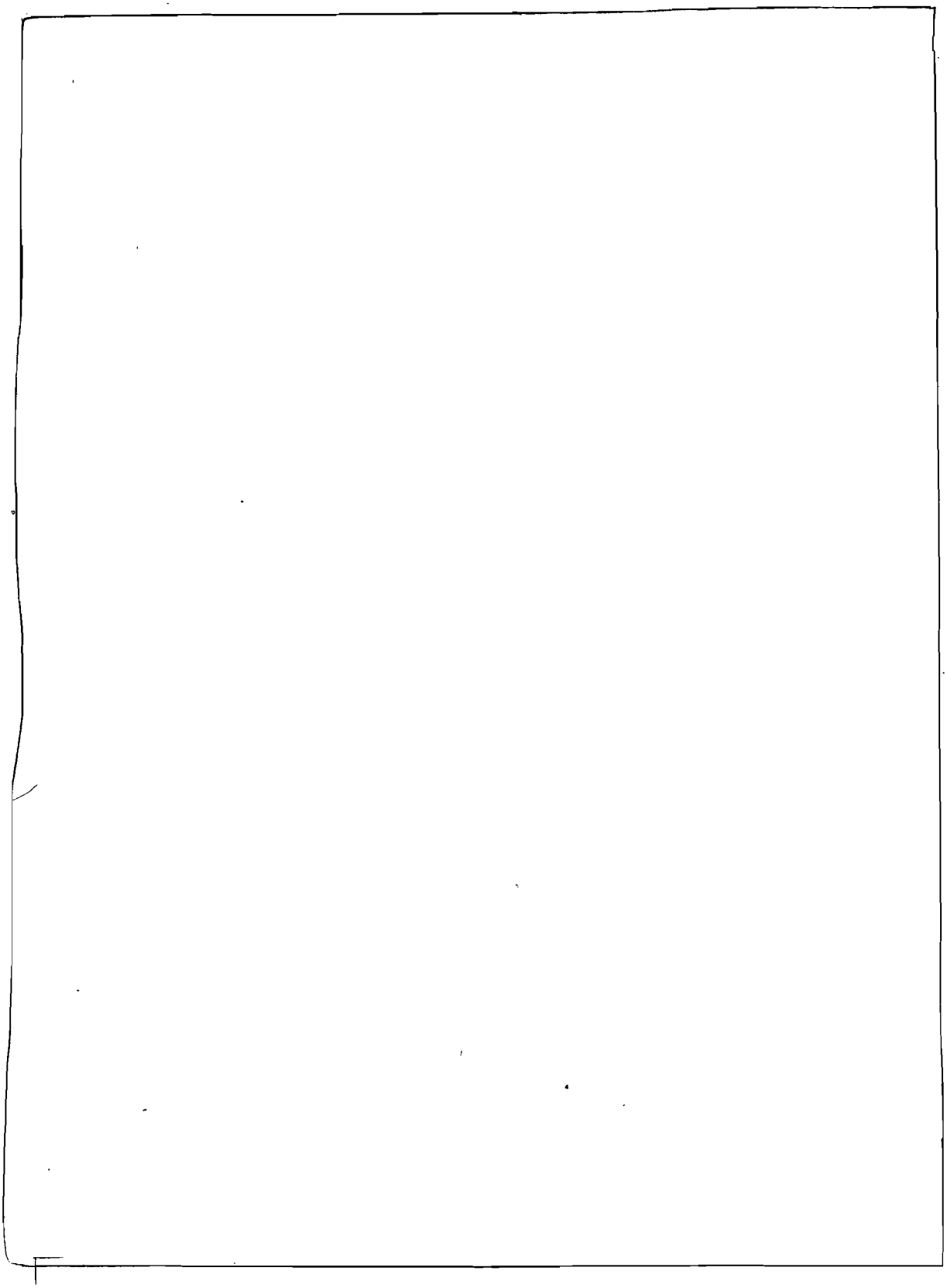

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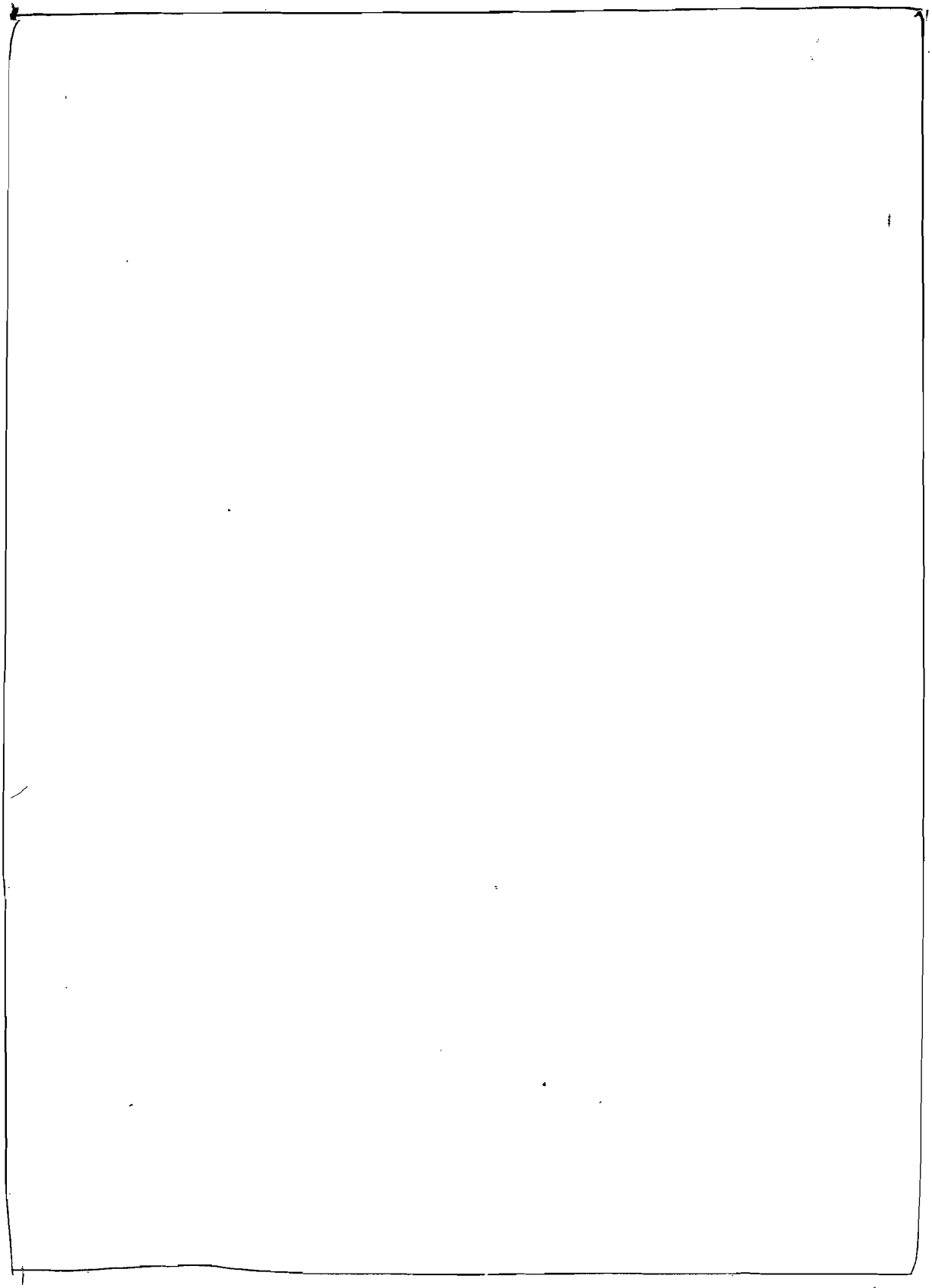

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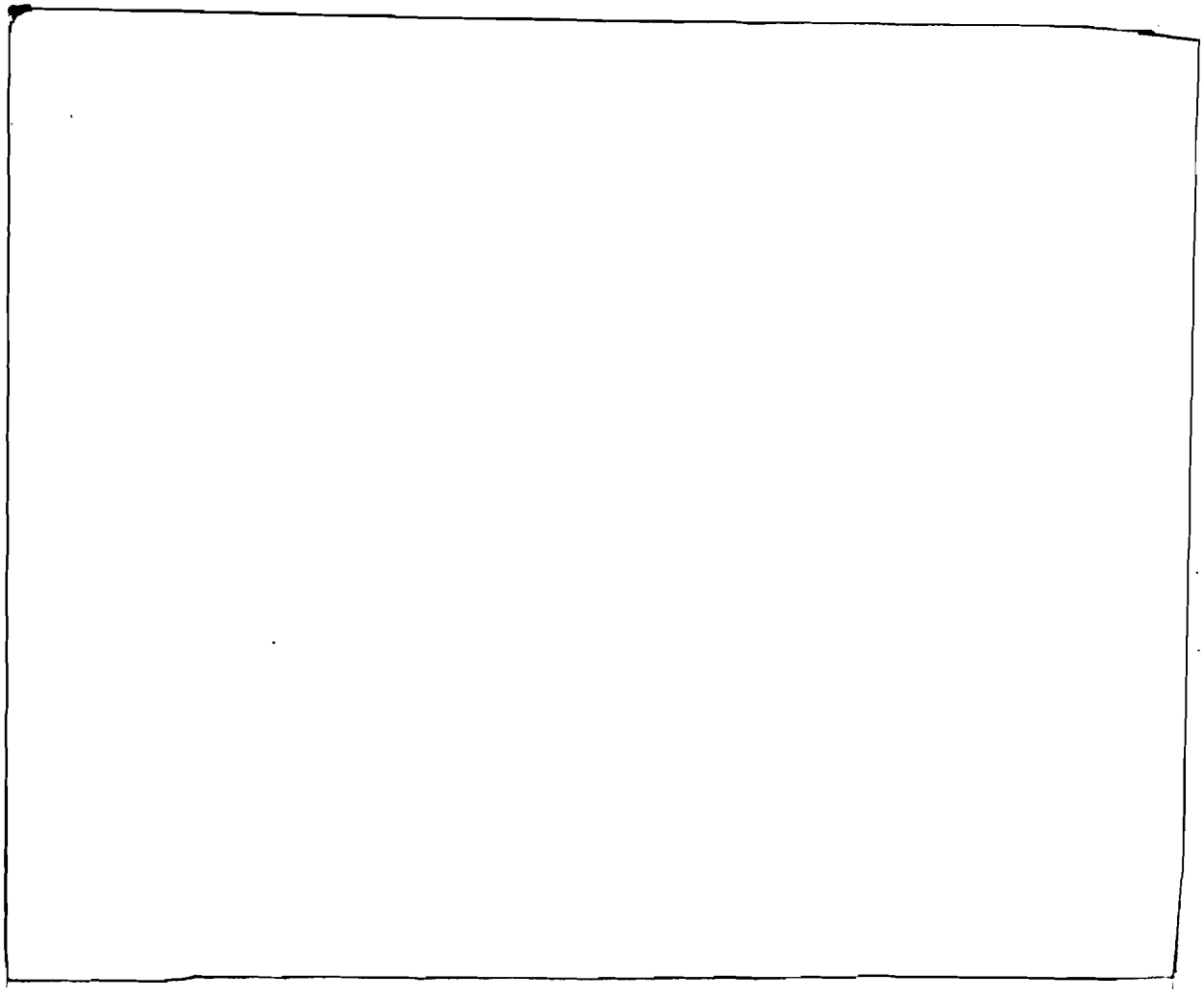

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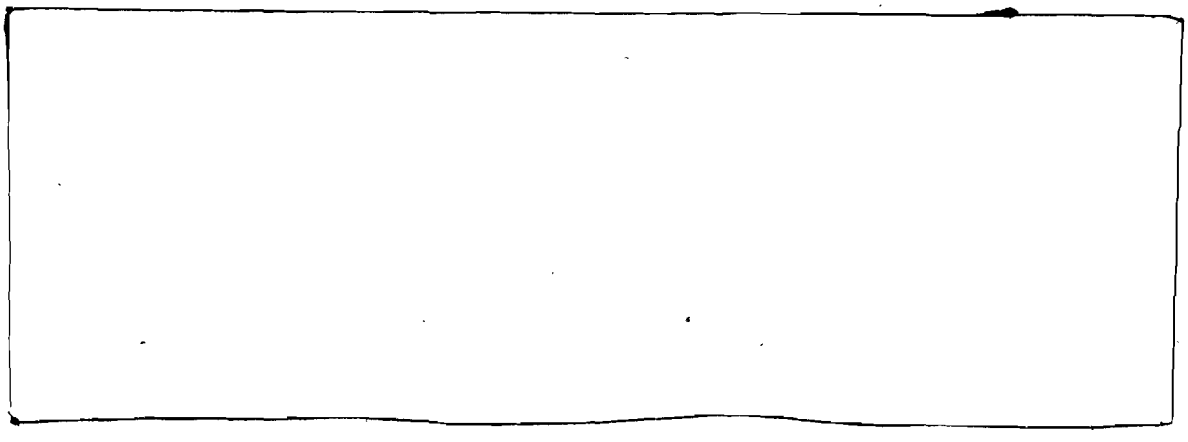
Concluding Remarks



(b)(5)

References

(b)(5)

Appendix: Radar Hits After the Explosion

Table A1
Radar Hits After Explosion: JFK

Time(s)	Range	Azimuth(mag)
16.75	50.250	102.041
16.75	50.469	101.865
21.35	50.875	101.602
21.35	50.688	102.041
21.35	50.406	101.953
21.35	50.313	102.129
25.98	50.250	101.602
25.98	50.813	101.777
25.98	51.250	101.602
25.98	50.625	102.129
25.98	50.438	102.217
30.59	51.500	101.250
30.59	50.688	101.689
30.59	51.094	102.041
30.59	50.375	102.041
35.07	51.656	100.898
35.22	51.188	101.602
35.22	50.500	102.129
39.71	51.750	101.162
39.71	51.688	101.074
39.83	51.219	101.602
44.31	51.781	100.459
44.31	51.938	101.074
44.46	50.563	102.129
44.46	51.250	101.689
48.92	51.938	100.986
49.07	52.063	101.250
49.07	50.531	101.777
49.07	50.906	101.865
53.56	52.000	100.898
53.56	52.094	101.074
53.71	50.563	102.305
58.17	52.156	100.898
58.17	52.063	100.986
58.31	51.250	101.865
62.95	51.281	101.602
62.8	52.125	100.986
62.95	50.438	102.129

Table A2
Radar Hits After Explosion: ISP

Time(s)	Range	Azimuth(mag)
16.22	21.516	126.914
16.22	21.609	126.387
20.91	21.609	127.969
20.91	21.516	127.705
20.91	22.016	124.189
25.61	21.563	127.881
25.46	22.266	123.574
30.30	21.563	127.266
30.15	22.422	123.223
35.02	22.266	124.805
34.87	22.469	122.695
39.56	22.578	122.520
39.56	22.469	122.520
44.26	22.734	122.520
48.96	22.875	122.432
53.80	21.859	125.947
58.50	22.328	125.156
63.19	22.375	124.980

Table A3
Radar Hits After Explosion: HPN

Time(s)	Range	Azimuth(mag)
14.64	53.609	129.990
24.04	54.203	128.408
24.04	53.703	130.430
28.75	54.359	128.320
28.75	53.656	131.045
28.75	53.906	130.342
33.44	54.469	128.057
33.44	53.703	130.957
33.44	53.813	130.342
33.44	53.953	129.639
38.13	54.516	127.969
38.13	53.703	130.781
38.13	53.906	129.727
38.13	54.109	129.639
42.83	54.406	128.936
42.83	54.563	128.232
42.83	54.609	127.705
42.83	53.750	130.781
47.52	54.766	127.969
47.52	54.563	128.057
47.52	53.750	130.254
52.22	54.109	128.936
52.22	54.563	128.145
52.22	53.813	130.693
52.22	53.859	129.463
75.71	53.859	130.254

Table A4
Radar Hits After Explosion: RHD

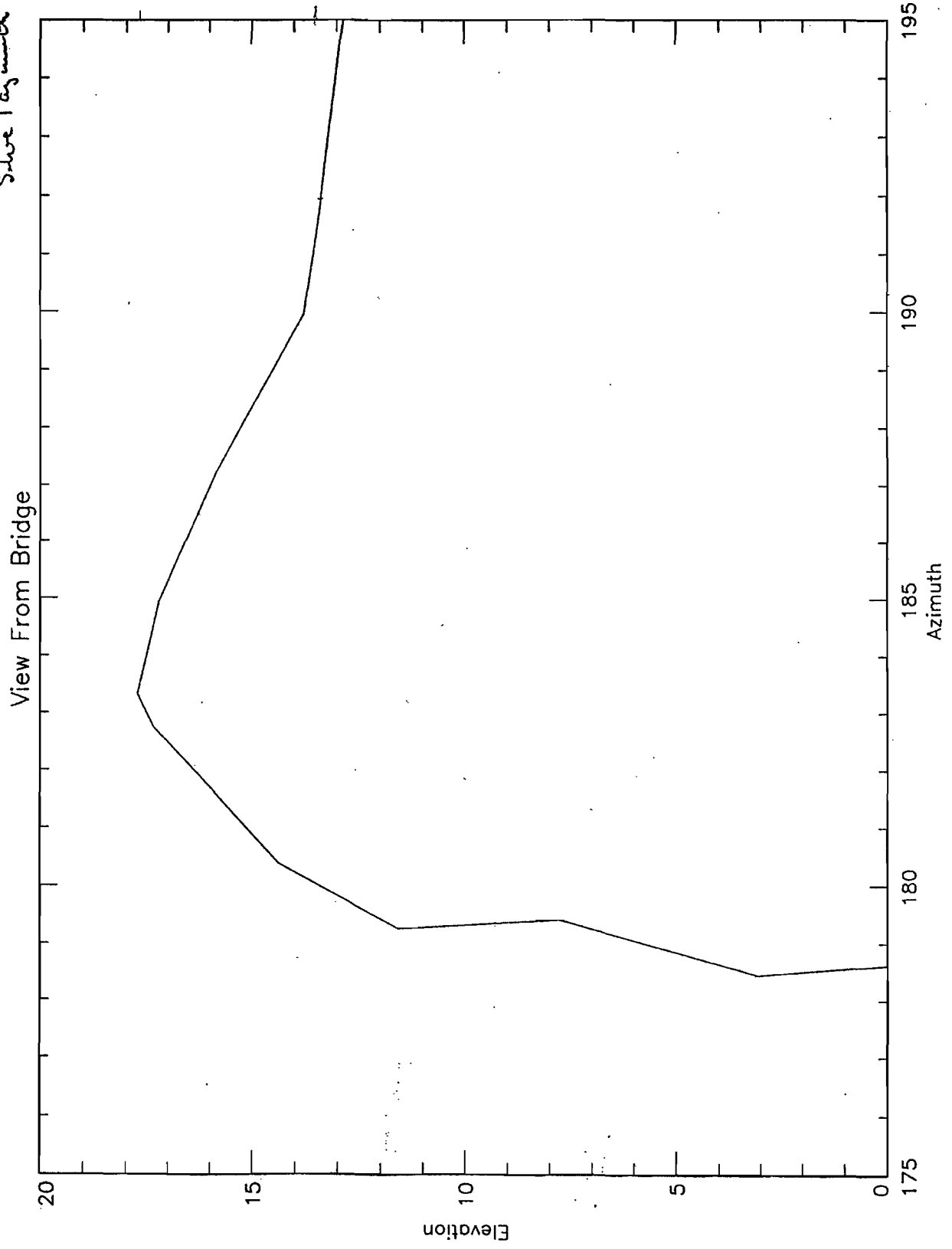
Time(s)	Range	Azimuth
21.4	13.75	175.25
31.9	14.13	128.76
33.3	13.25	170.33
33.6	14.00	182.46
43.9	14.25	128.67
45.2	13.13	168.84
49.6	12.75	247.06
55.7	14.25	128.85
57.1	13.25	168.05
69.0	13.25	168.31

Note: Times are relative to 20:31 EDT

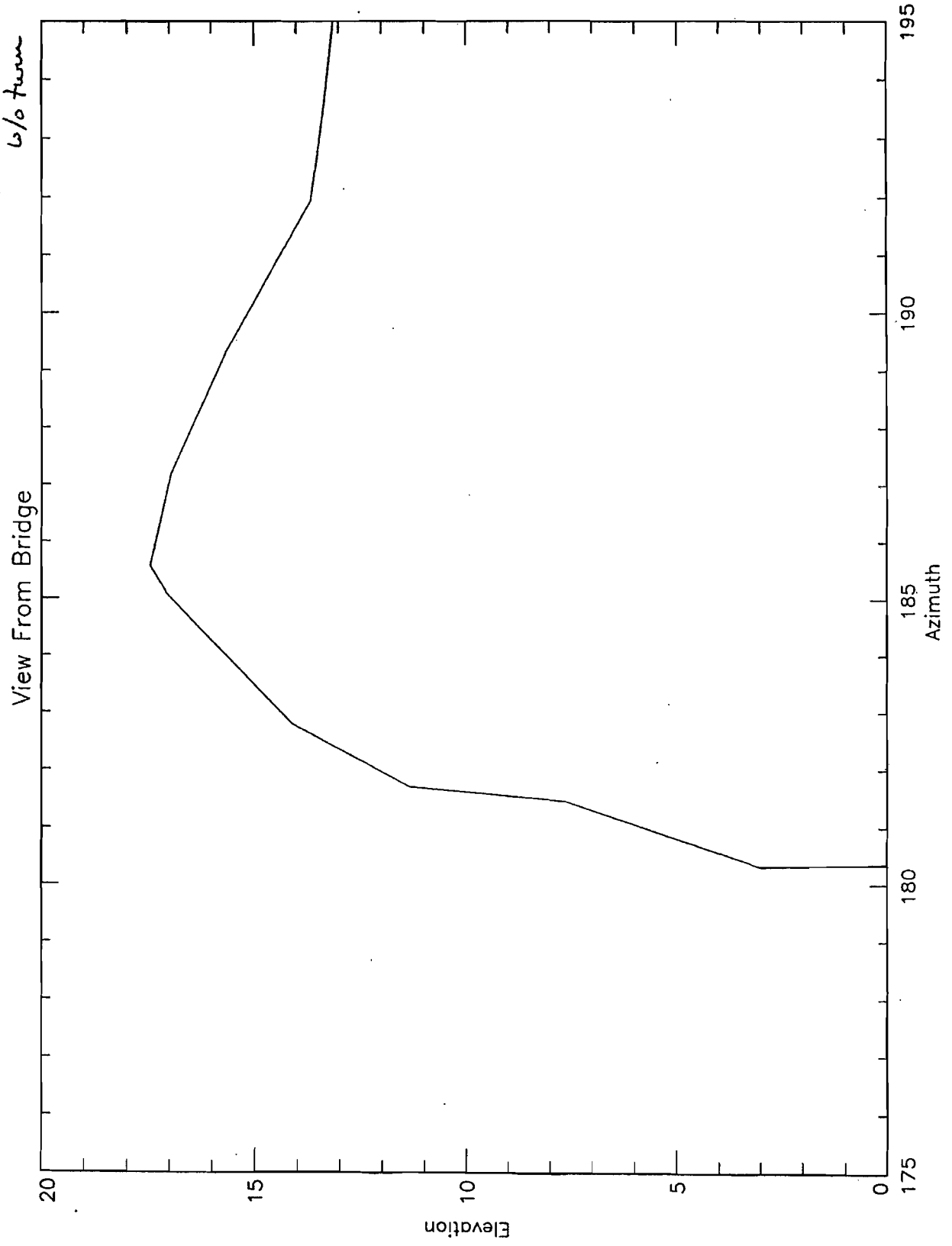
6

3/17/58

Maxwell = 16.8
Silver Lagoon

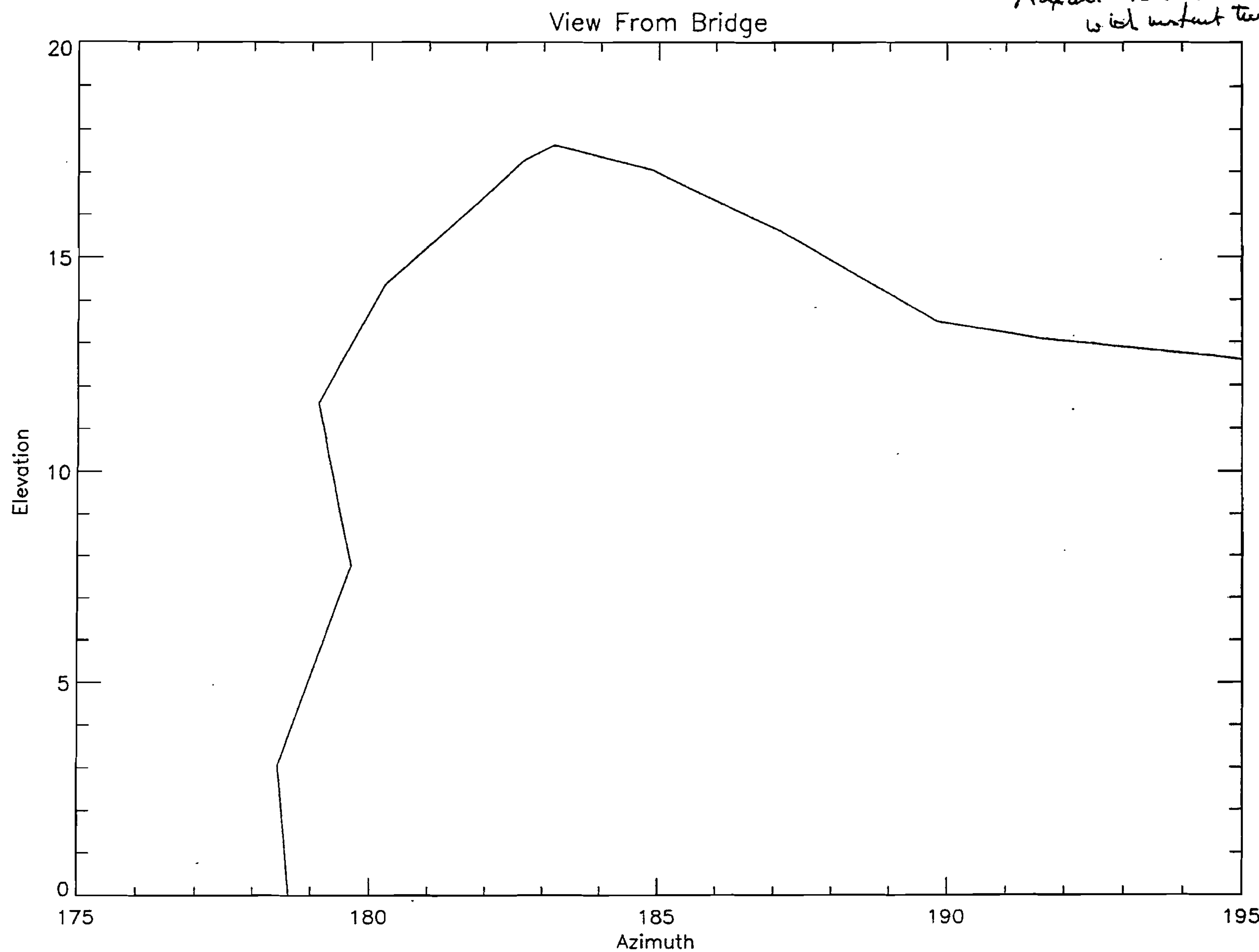


3/17/98
Max alt = 16.8 kft
s/o turn



3/17/98

Max alt = 16.6 kft
with instant turn



6 Jan 98

fort71.splt

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 Export File From Splat. Created: Tue Jan  6 12:22:22 1998
       0       0       0       1       1.00000       0
      0.00000       50.0000
      50.0000       53.0000
      4.24000       50.4400
      50.2293       52.1353
       0       3          38       1       2       0       0
Radar Range Vs Time
Time (s)
Range (nm)
Unclassified
[redacted]work/twa800/output/fort.71
Observed
       1
Computed
[redacted]work/twa800/output/fort.71
       1       0       1.00000       0       1
       3          38       1       3
      4.24000       50.4400
      50.3040       52.1062
       1
      31.7613       52.6549       3.00000       0
JFK
```

(b) (3)

(b) (3)

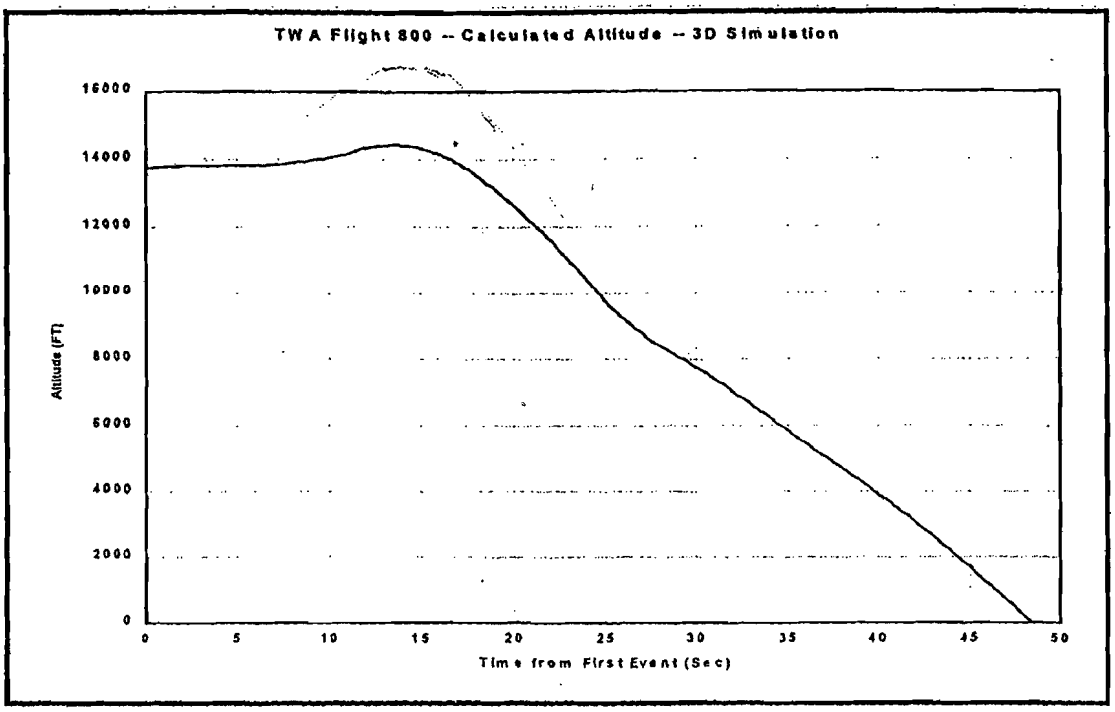


Figure 19, Calculated Variation in Altitude – Three Dimensional Simulation

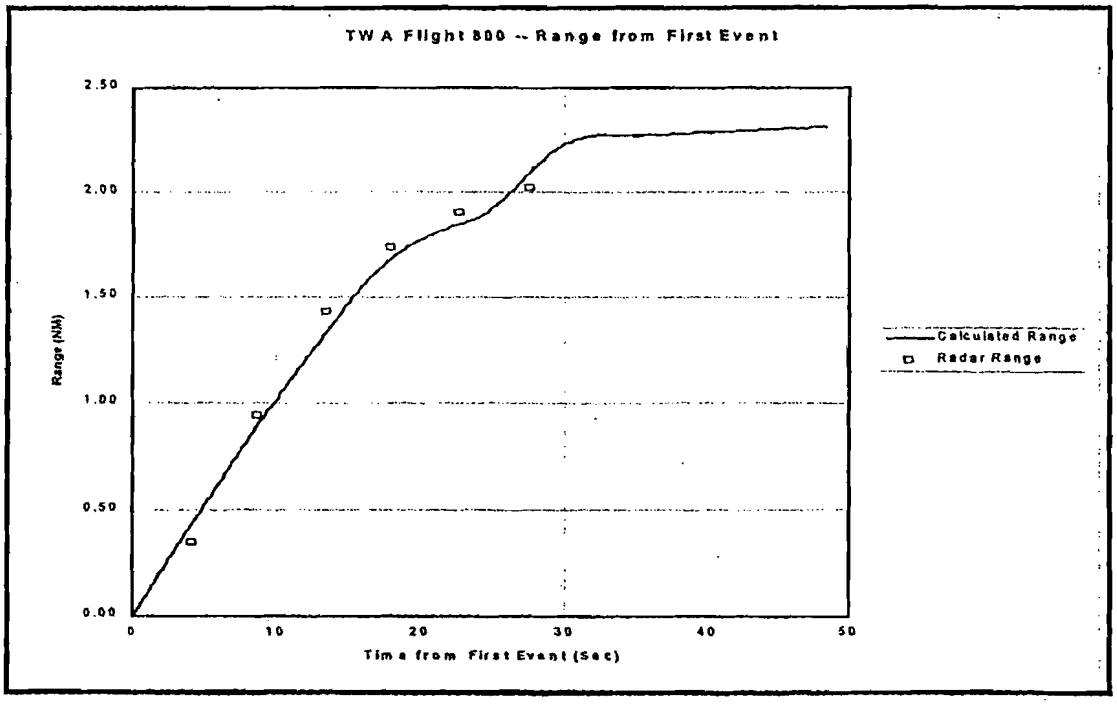
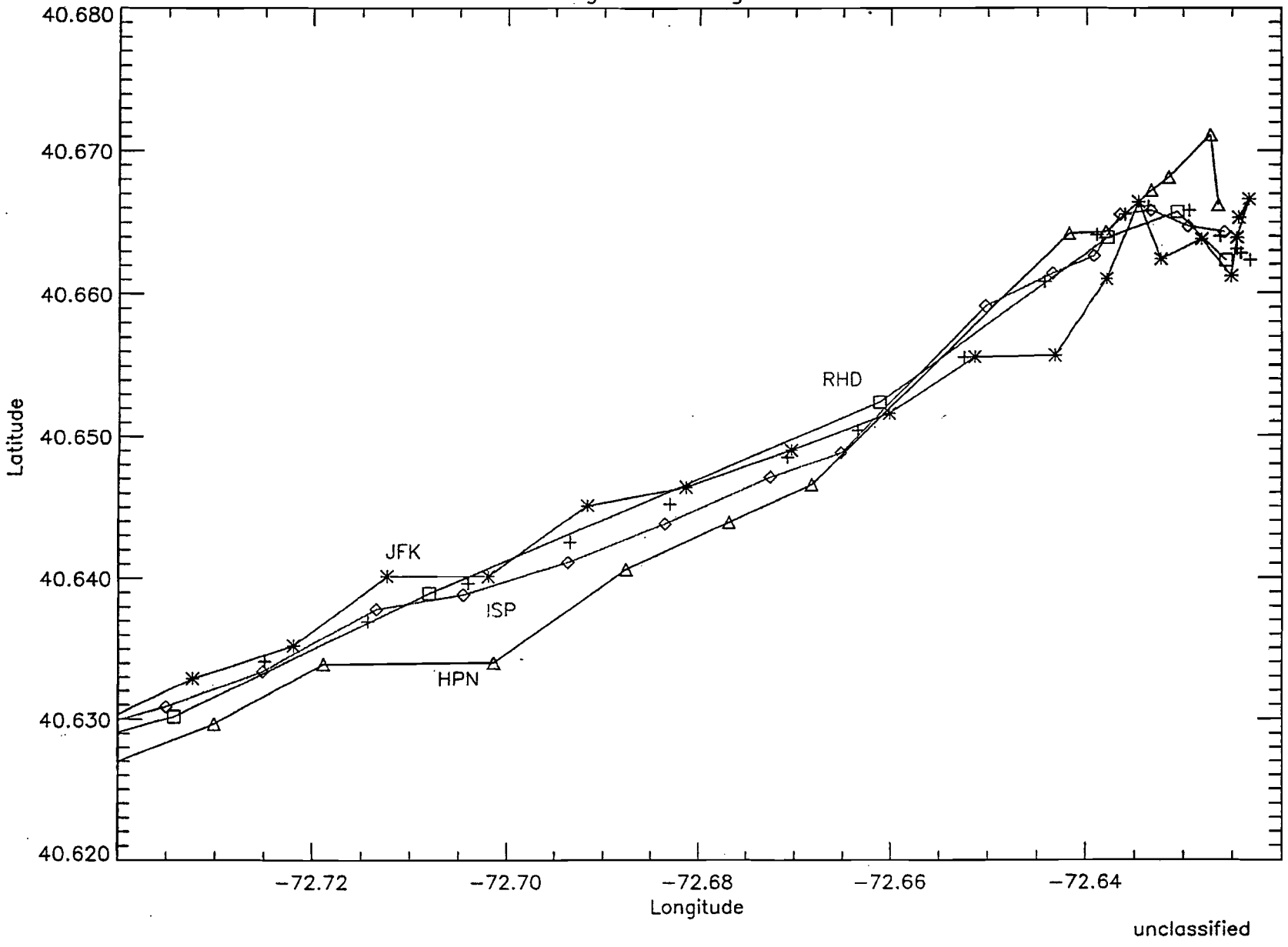


Figure 20, Calculated Range from First Event -- Three Dimensional Simulation

Figure 13: Flight Path



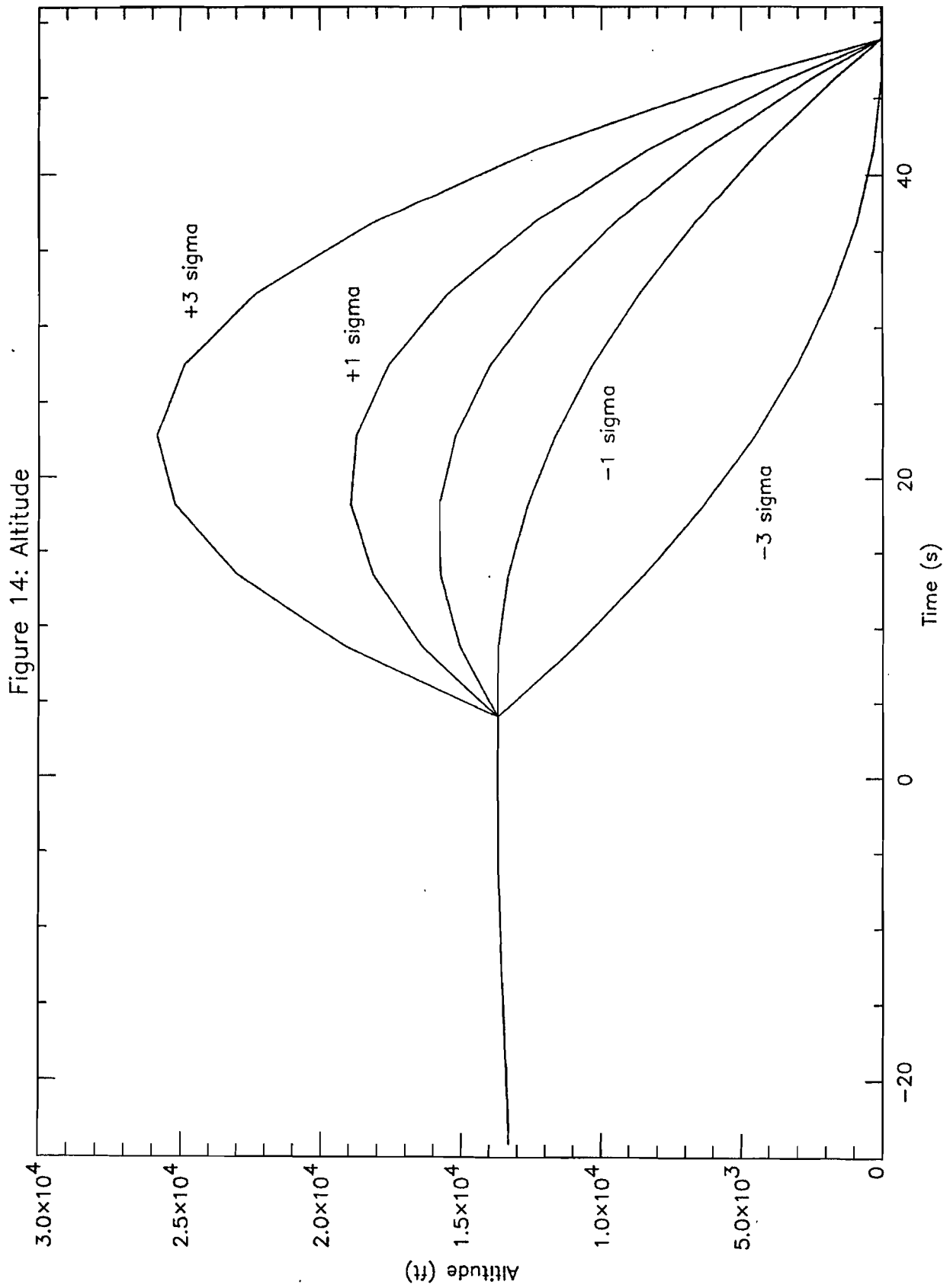
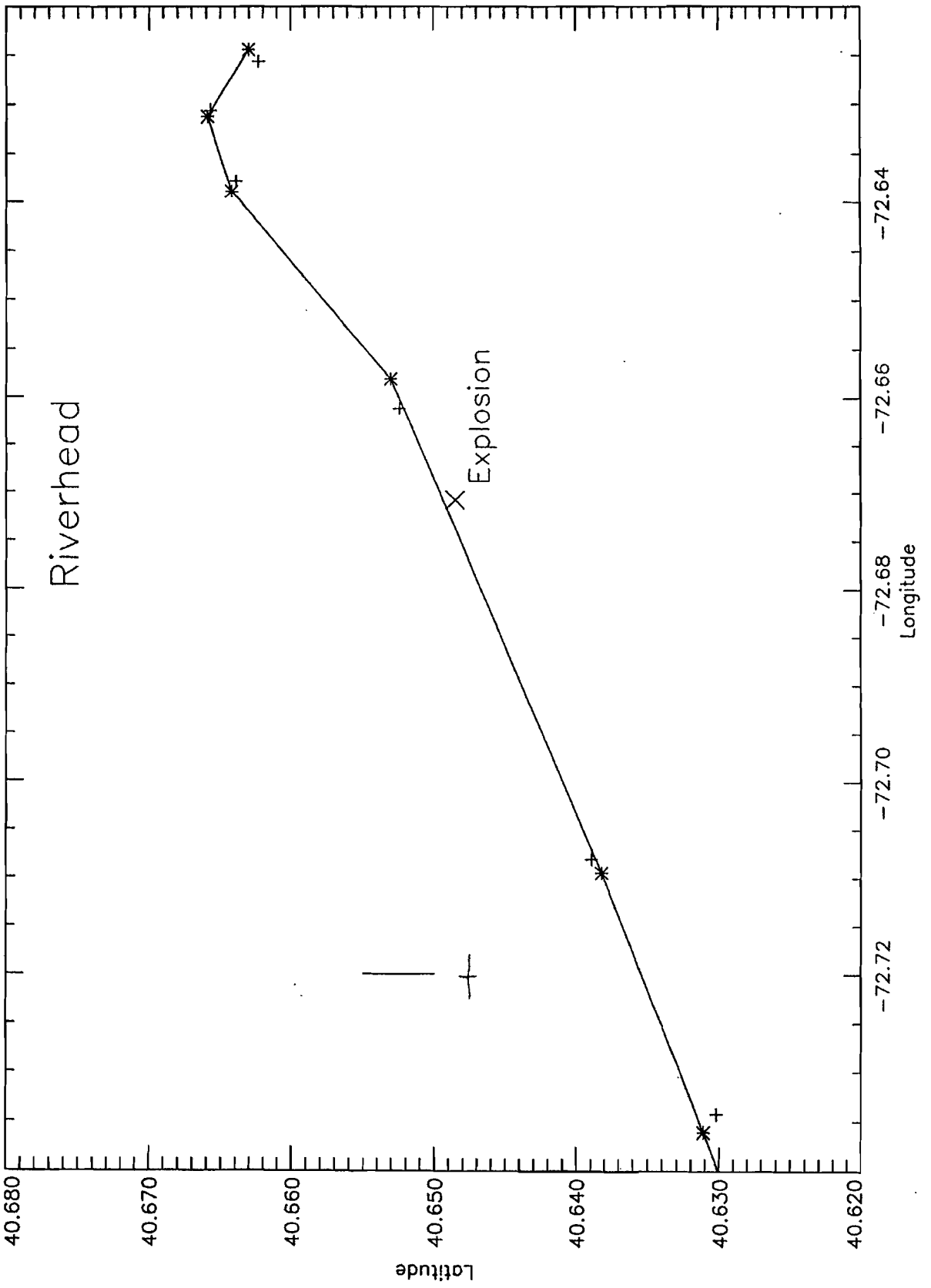
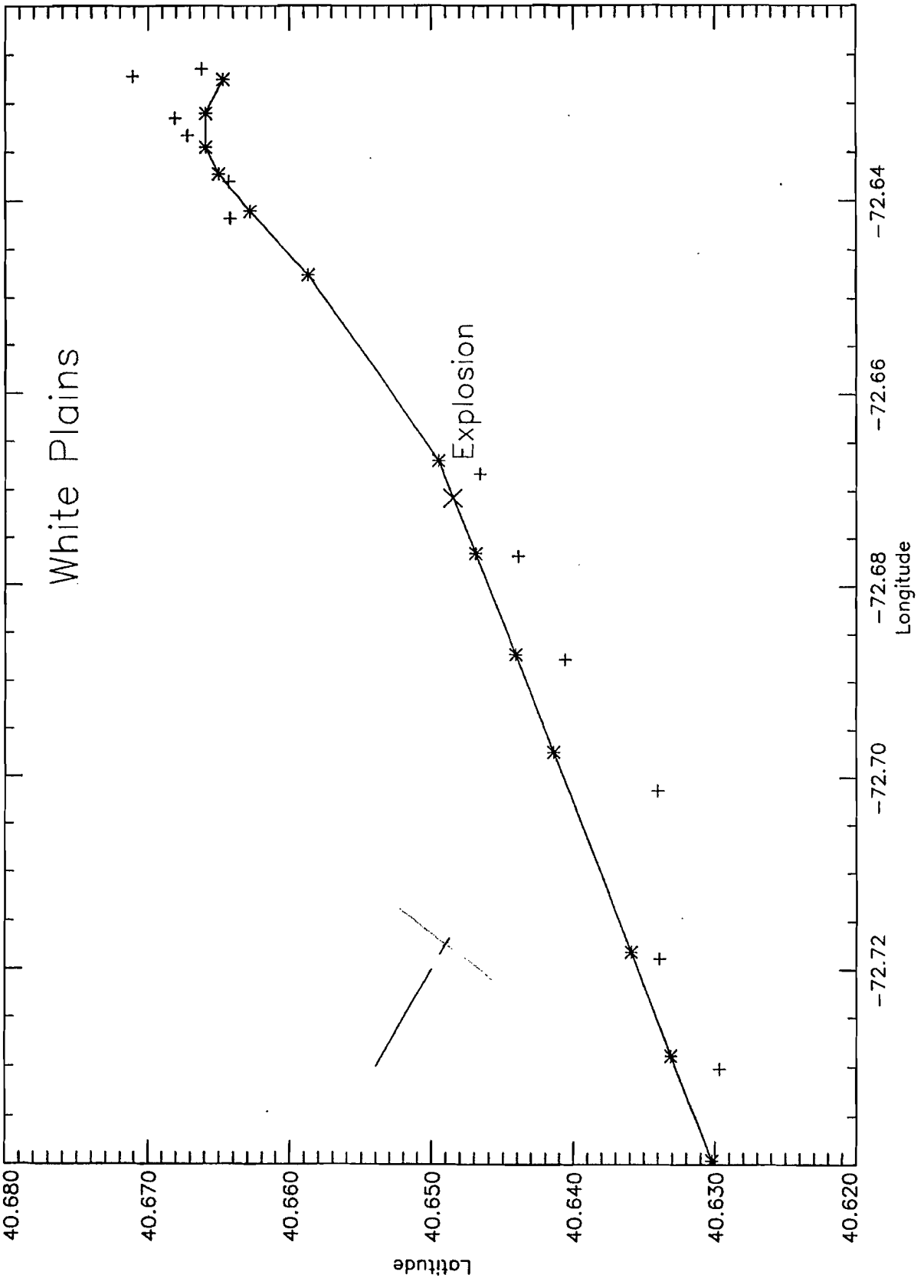
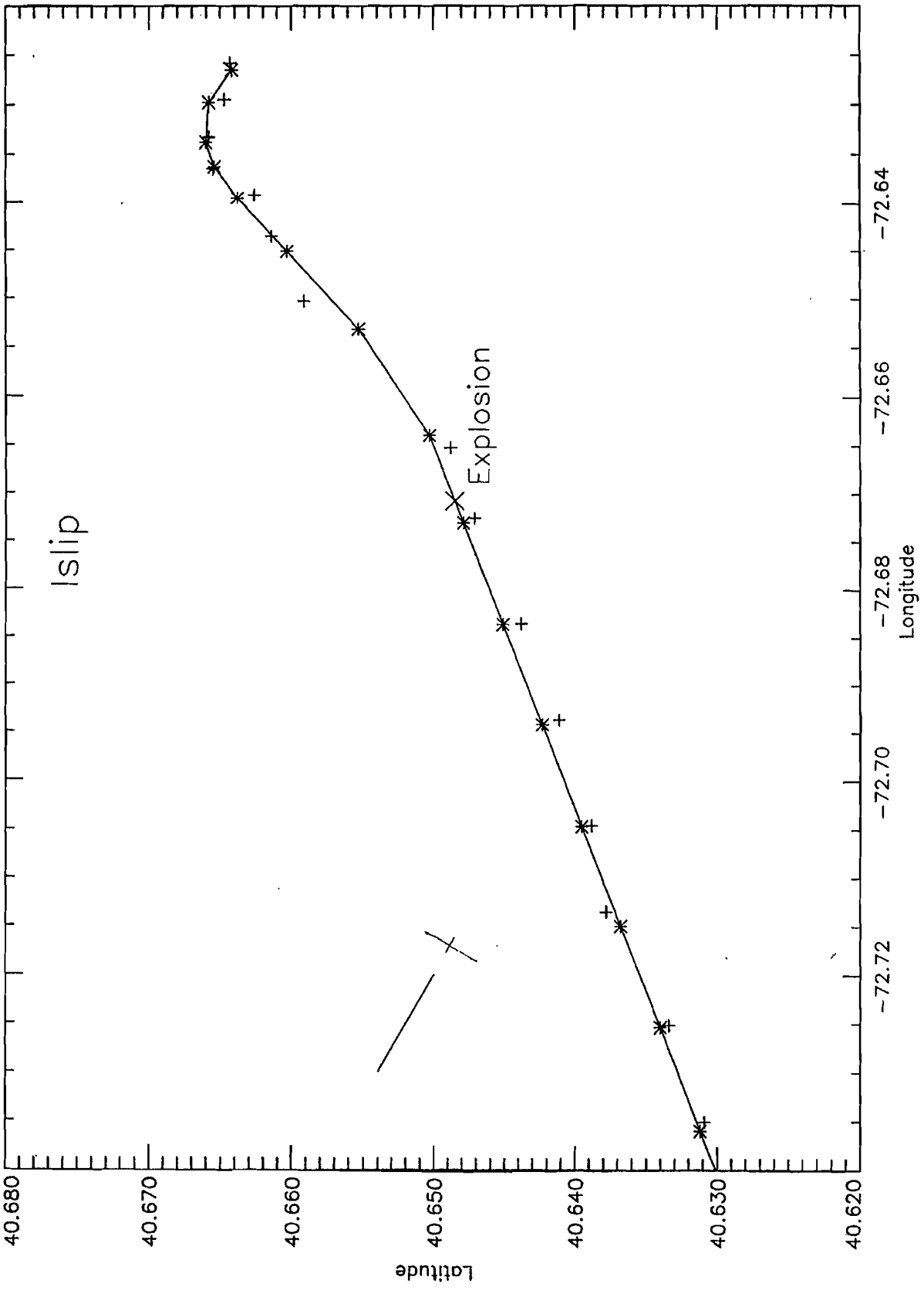
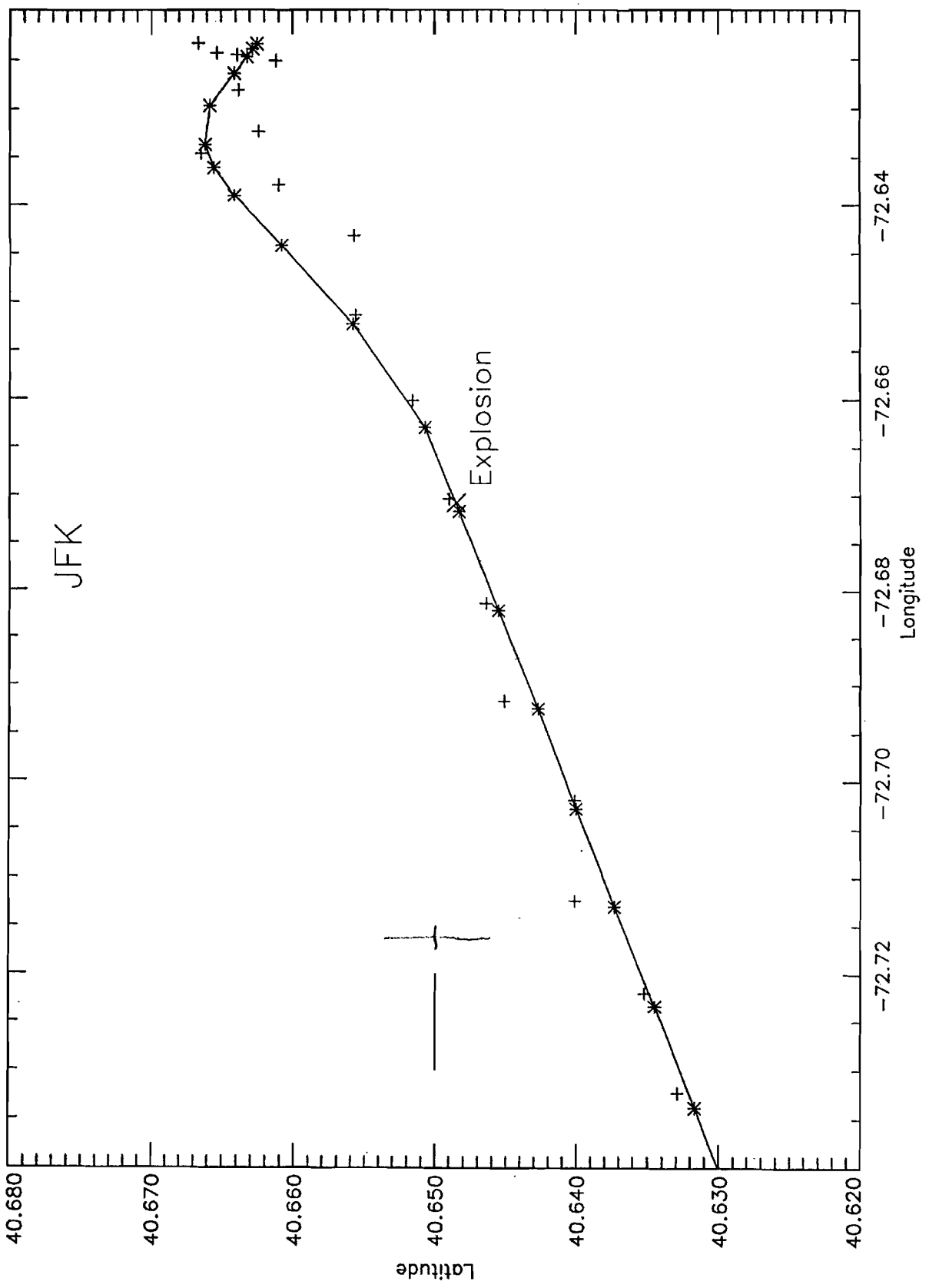


Figure 14: Altitude









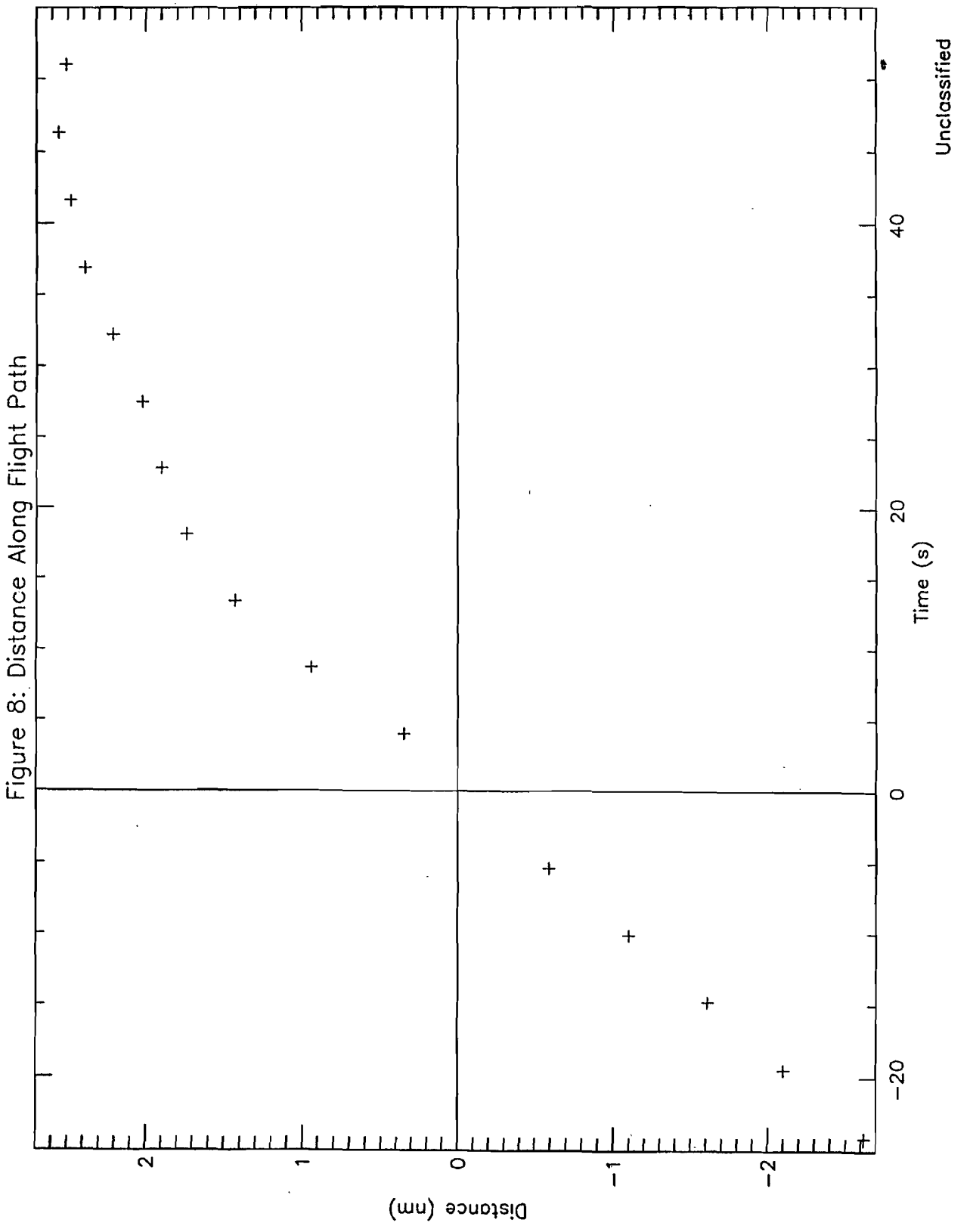
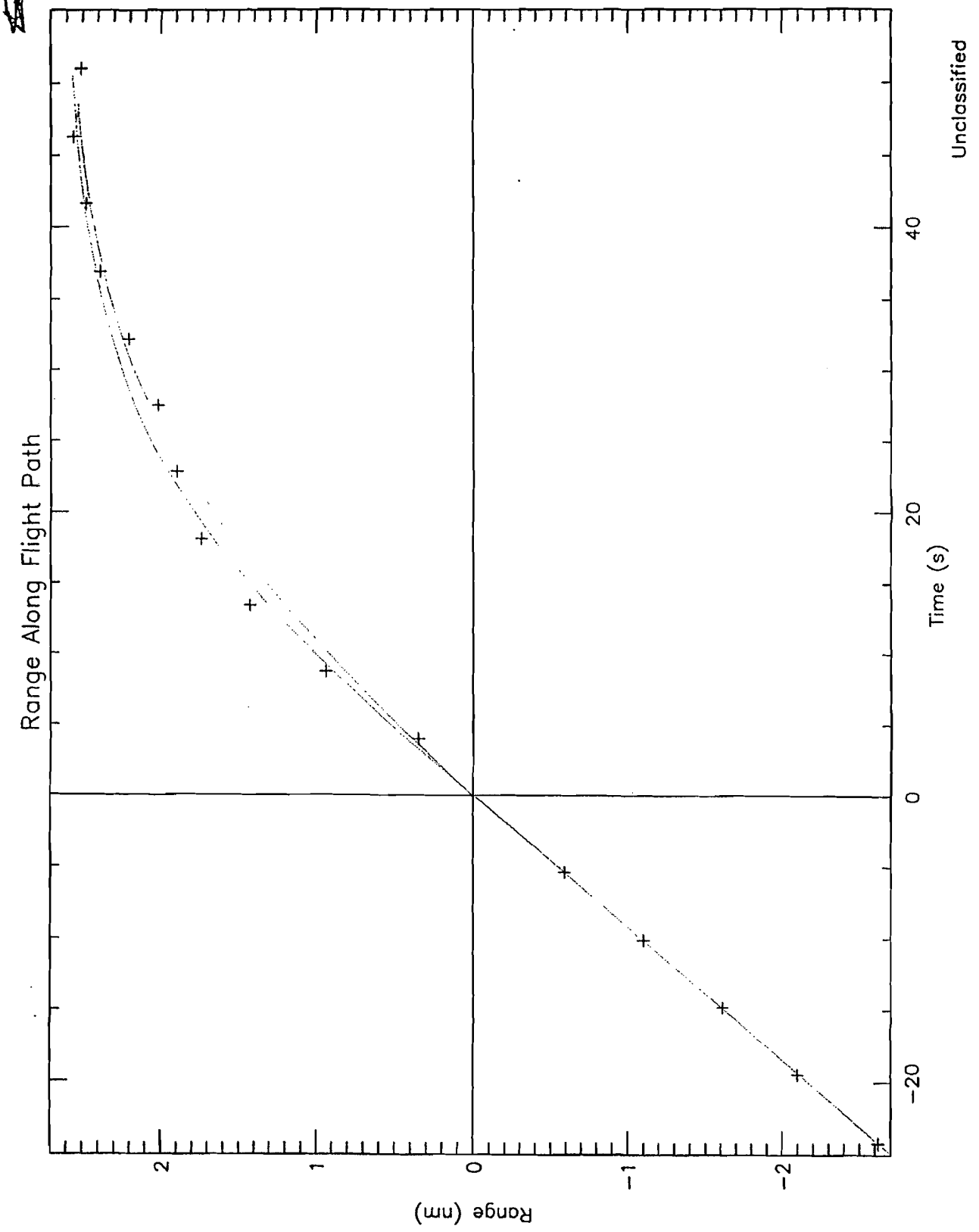


Figure 8: Distance Along Flight Path



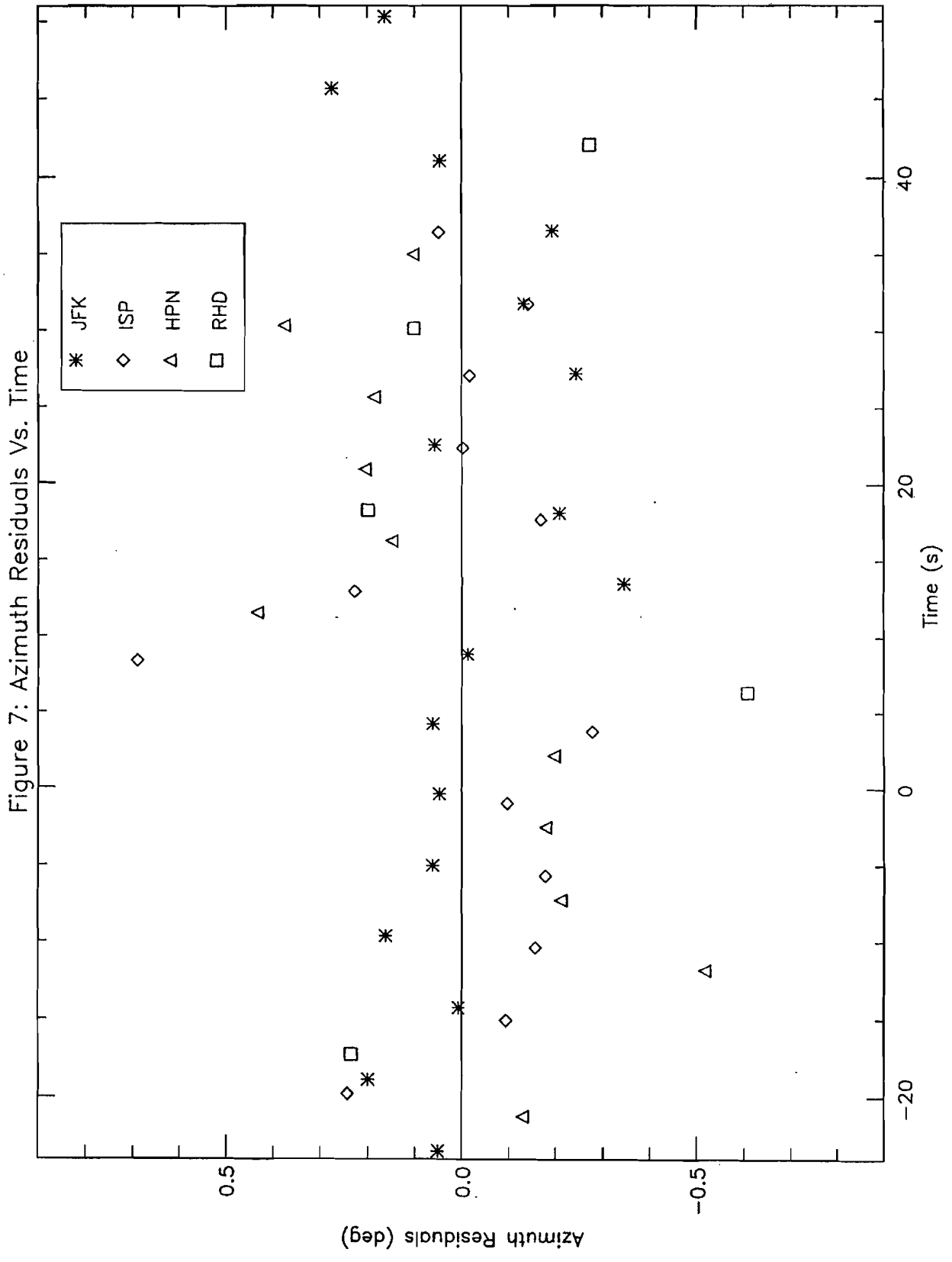


Figure 7: Azimuth Residuals Vs. Time

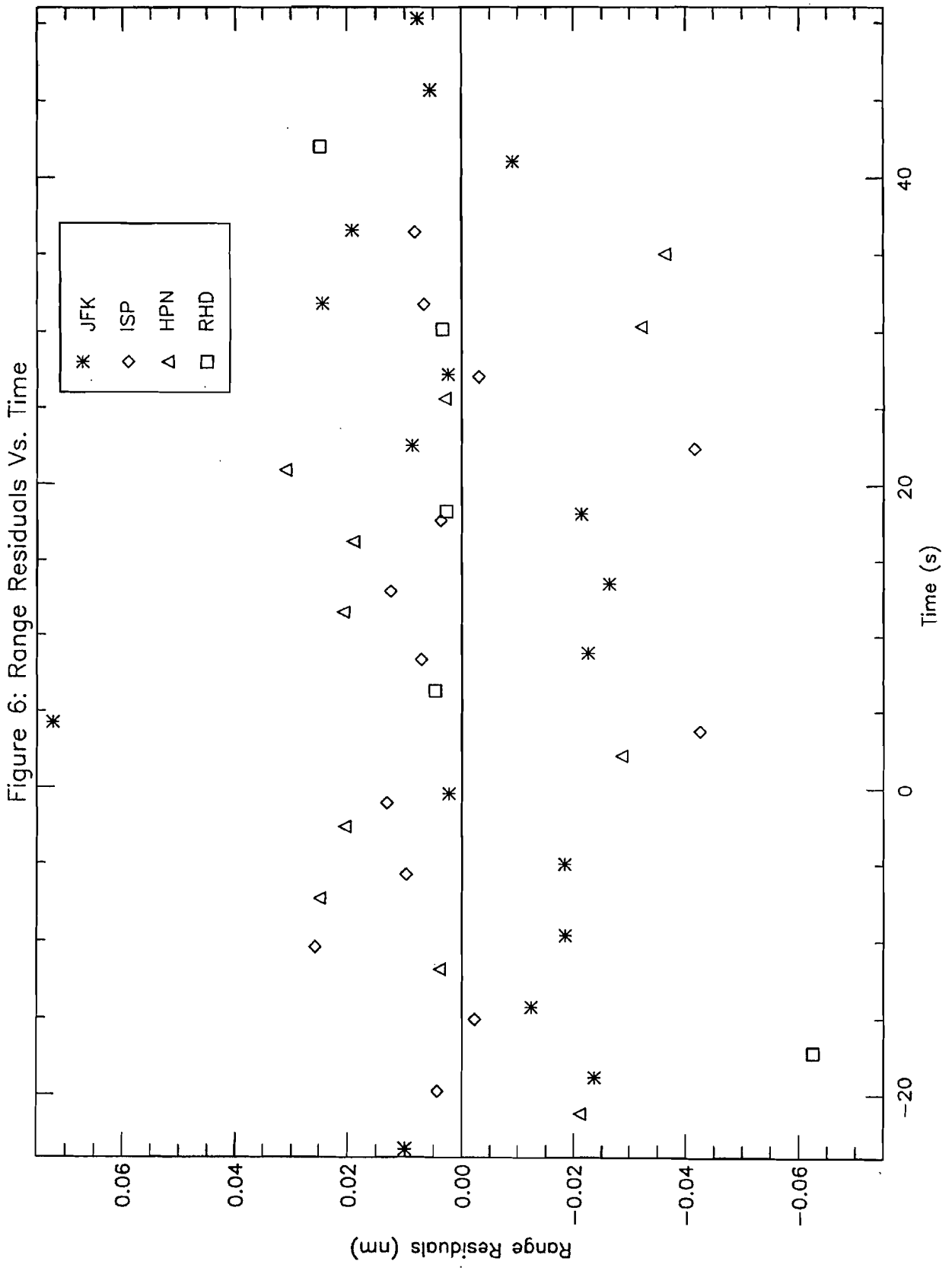


Figure 6: Range Residuals Vs. Time

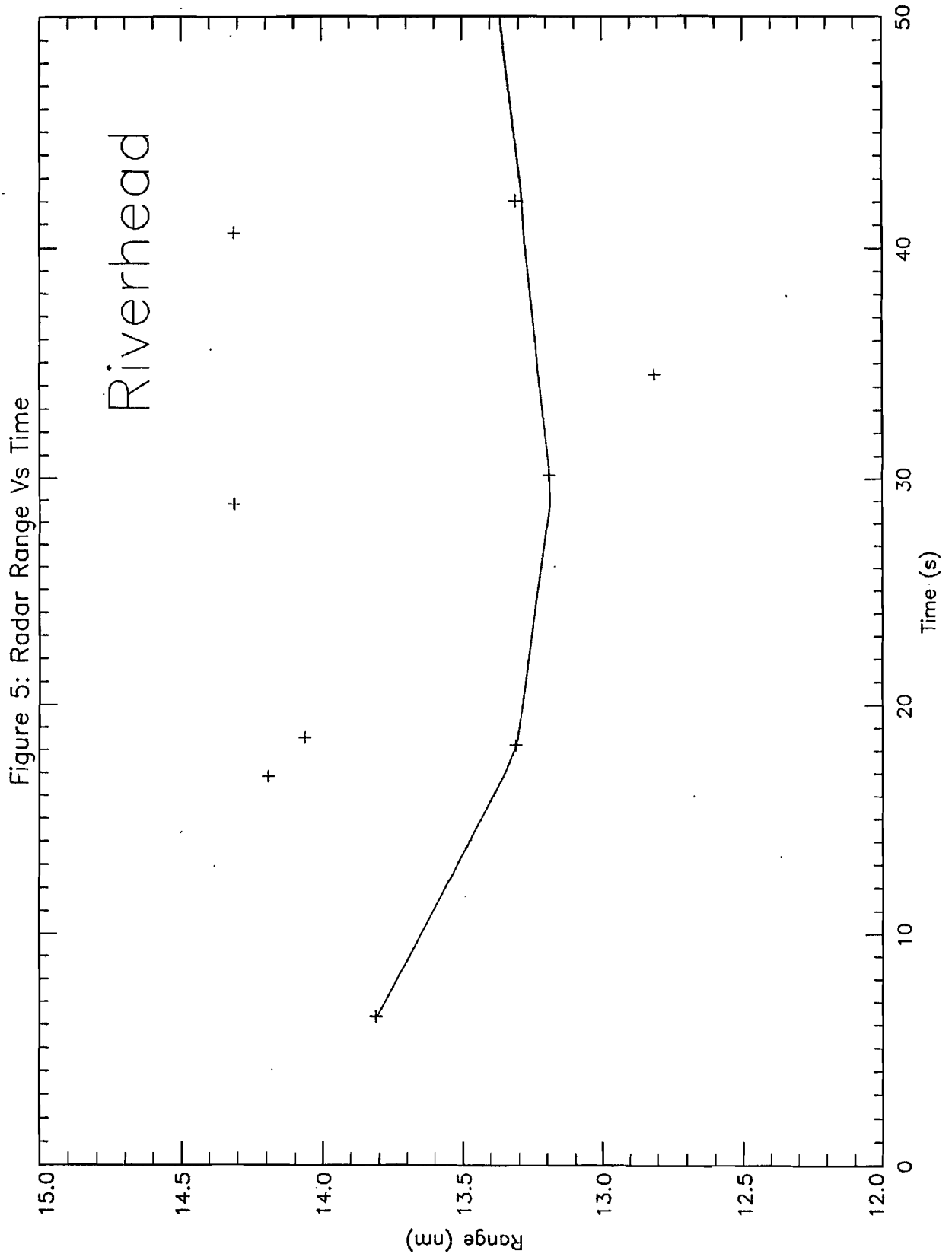


Figure 5: Radar Range Vs Time

Figure 4: Radar Range Vs Time

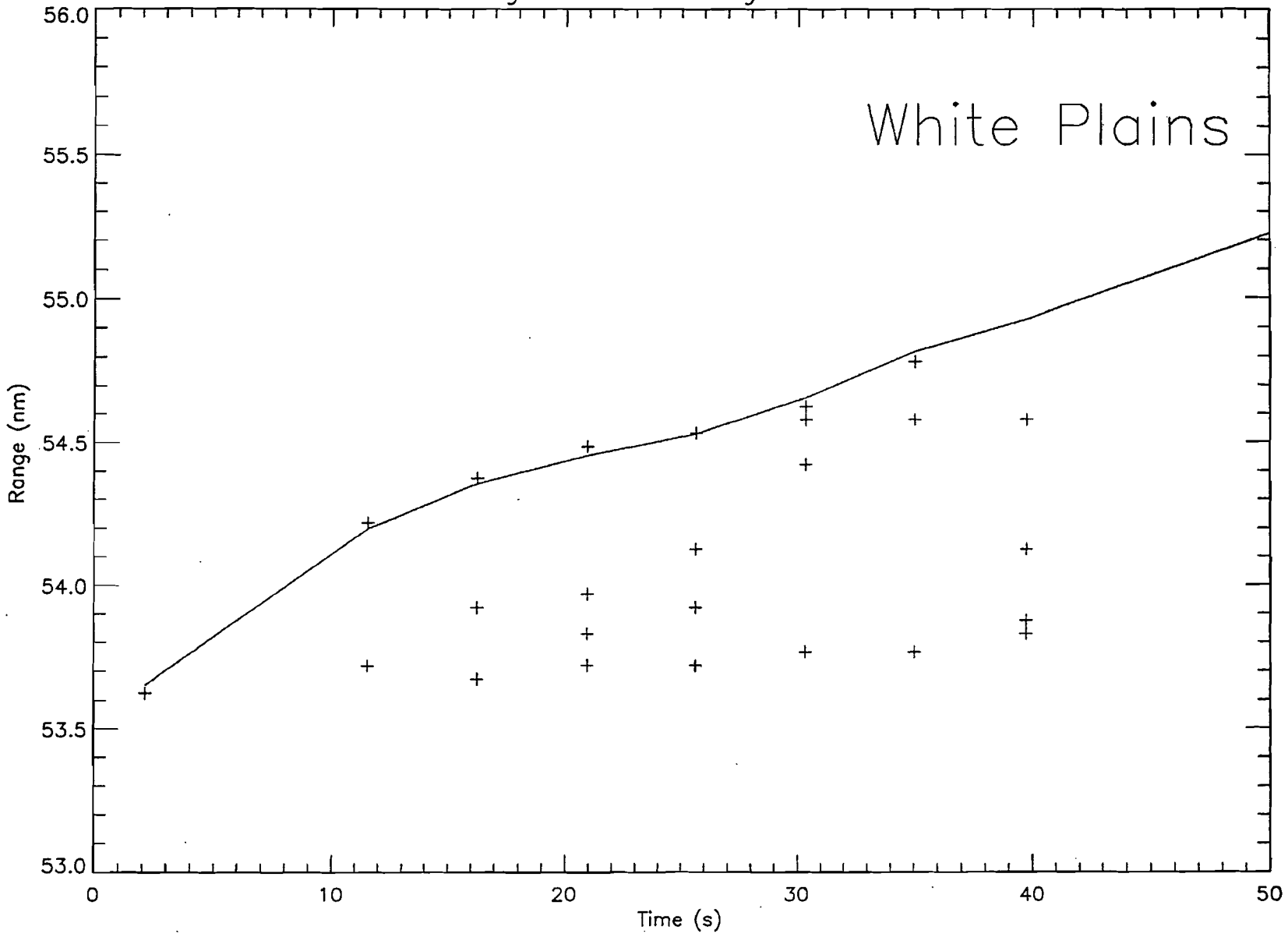
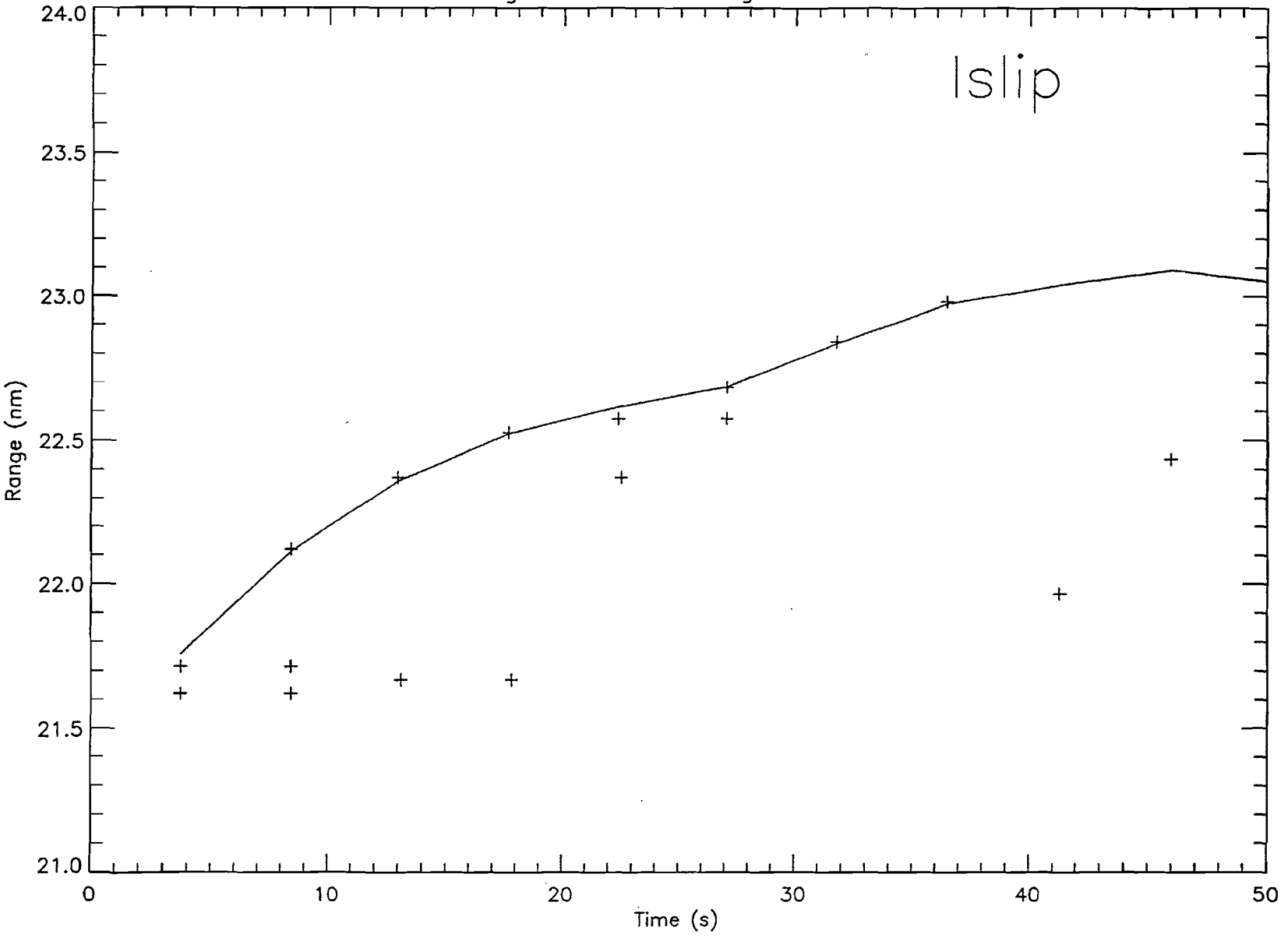


Figure 3: Radar Range Vs Time



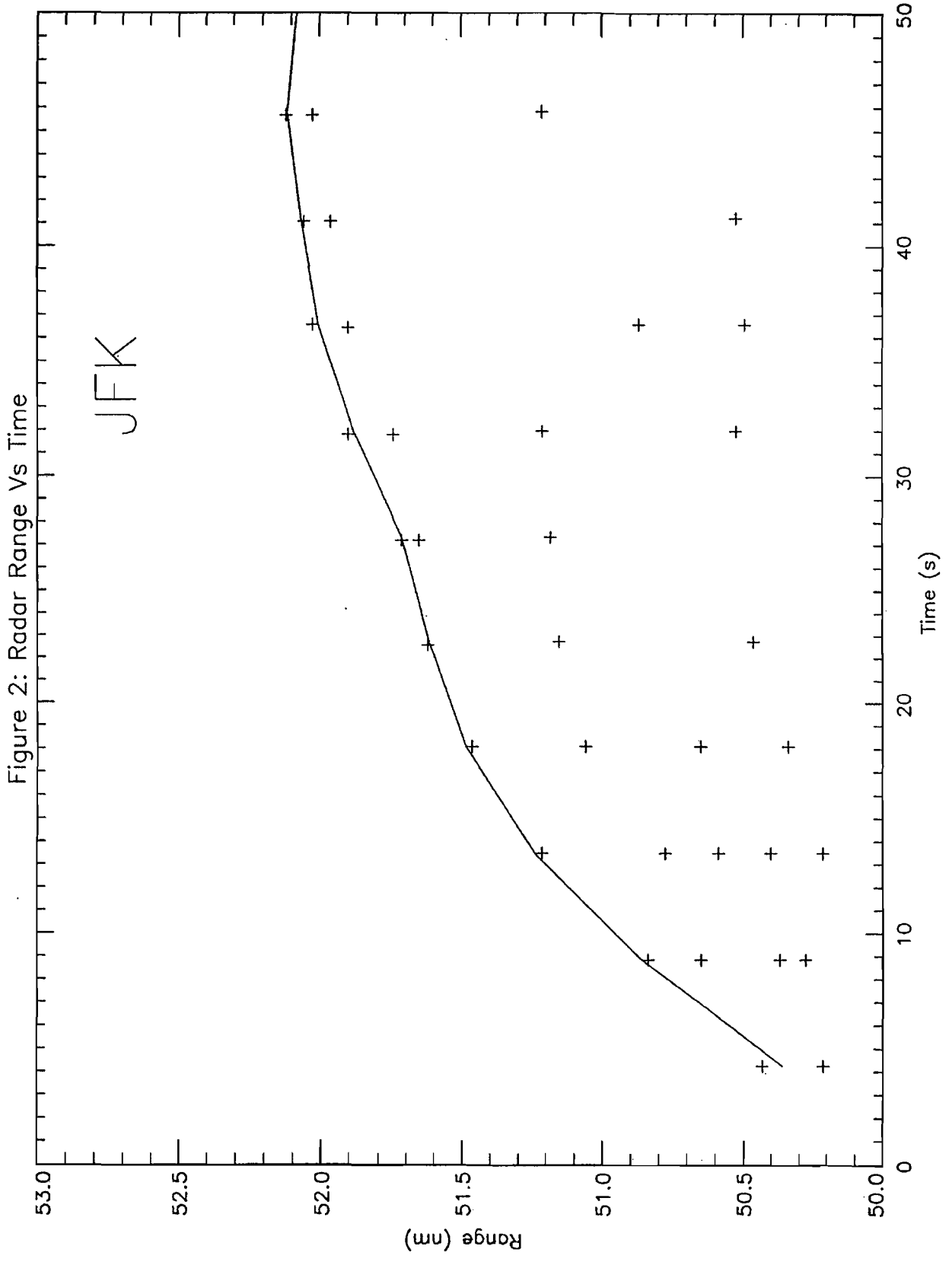
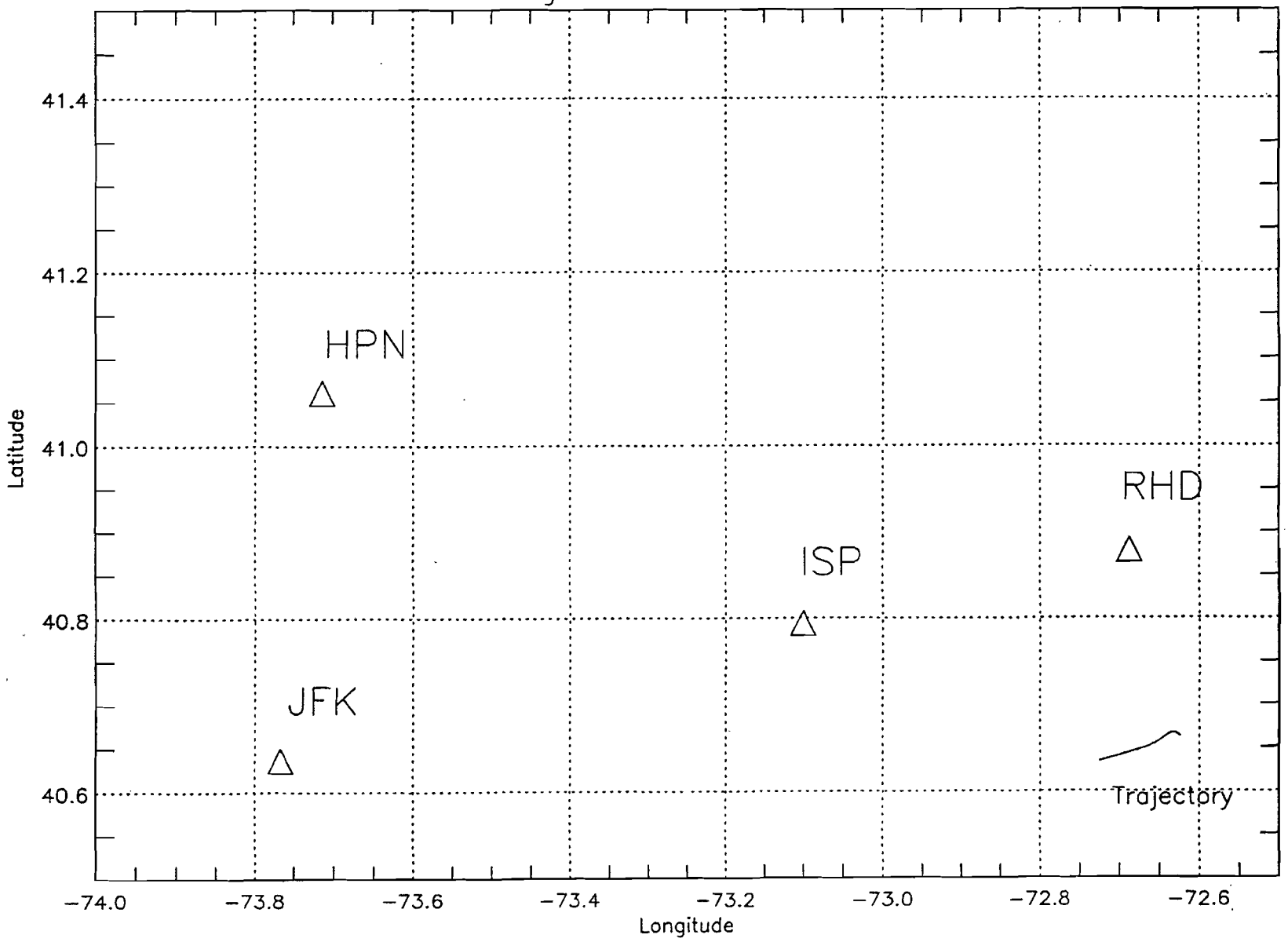
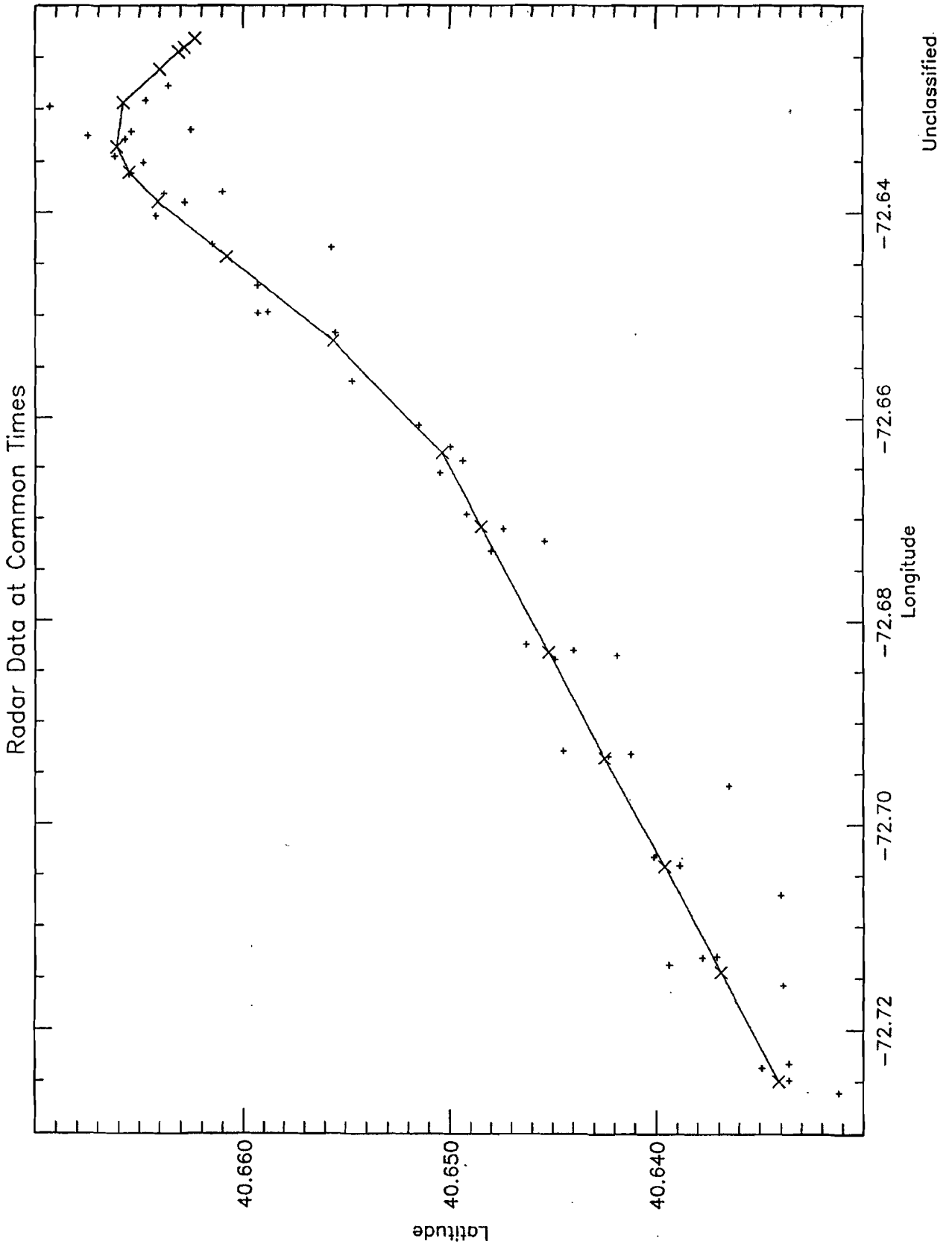
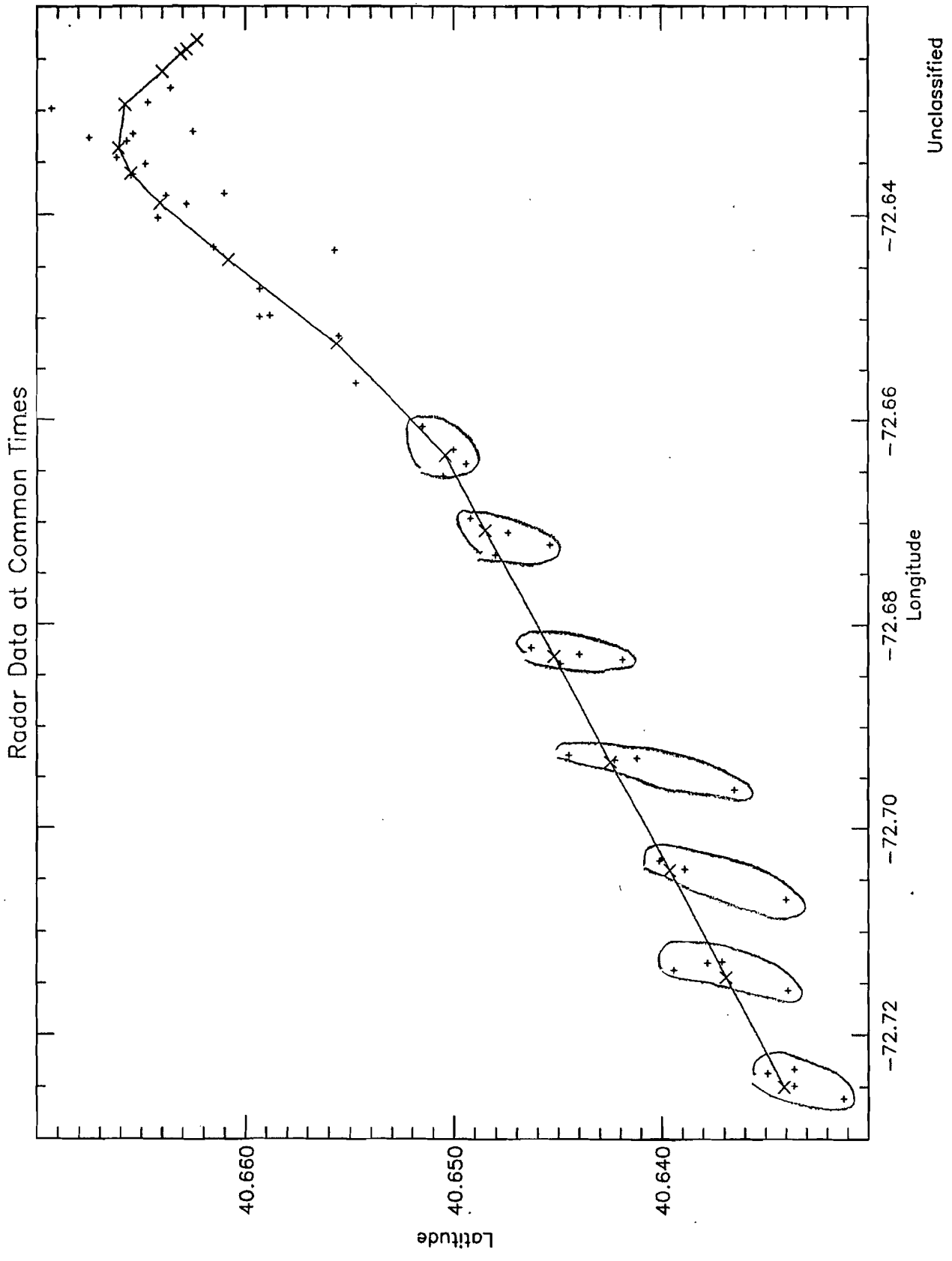


Figure 2: Radar Range Vs Time

Figure 1: Radar Locations







```
1
********H    RUN SETUP FOR TWA FLIGHT 800 ANALYSIS                    ******
********H    USES BOEING'S SECOND ESTIMATE CL-CD DATA
********H    AERO CENTER OF PRESSURE IS INPUT (SEE ARG2)
********H    EVENT 13 STARTS PROBLEM                                  ******
********H    EVENT 30 STARTS POINT MASS (WING BREAK)                  ******
********H    EVENTS 21 MARKS MAXIMUM ALTITUDE                        ******
********H    Forces altitude up using CRVT table                     ******
********H    Uses Rich's 15 Jan 98 radar data                        ******
       2L      0 0.                  11.0              D     2  G1
         D     3GMT                  4 0.0             D     5FP1
               6 0.0                 7 0.0                   8 0.0
       3L      0 0.                  11.0              D     2  G1
         D     3TLP                  4 0.0             D     5FP1
               6 0.0                 7 0.0                   8 0.0
      10L      0 0.                  11.0              D     2  G1
         D     3TLP                  4 0.0             D     5FP1
               6 0.0                 7 0.0                   8 0.0
      11L      0 0.                  11.0              D     2  G1
         D     3TLP                  4 0.0             D     5FP1
               6 0.0                 7 0.0                   8 0.0
      12L      0 0.                  11.0              D     2  G1
         D     3TLP                  4 0.0             D     5FP1
               6 0.0                 7 0.0                   8 0.0
      13L      0 0.                  11.0              D     2  G1
         D     3TLP                  4 0.0             D     5FP1
               6 0.0                 7 0.0                   8 0.0
      20L      0 0.                  11.0              D     2  G7
         D     3VDR                  4 0.0             D     5DVDR
               6 0.0                 7 0.0                   8 0.0
      30L      0 0.                  11.0              D     2  G1
         D     3H                    4 1100.           D     5VDR
               6 0.0                 7 0.0                   8 0.0
      40L      0 0.0                 11.0              D     2  G1
         D     3TDURP                4 0.0             D     5FP1
               6 0.0                 7 0.0                   8 0.0
      50L      0 0.                  11.0              D     2  G7
         D     3H                    4 60.0            D     5VDR
               6 0.0                 7 0.0                   8 0.0
      50L      0 0.                  12.0              D     2  G1
         D     3TC1                  4 80.             D     5FP1
               6 0.0                 7 0.0                   8 0.0
MPEXM000  ITRF  0.0
TSPXM  2  FESN   50.
*************************************************************************
*************************************************************************
TRAKM  2 DIN     B            DGEN    1
TRAKM  2  CTSID  2.0           HSLR   30.0          LATR   40.8008
TRAKM  2  L0NR   -72.6276      ELRK   -1.0          ELRCC  90.0
ITIFM  2  T1VAL  1.0           T2VAL  1.0          T3VAL  1.0
PFRPM  0  RSED1F 1.0           MAXKF  9.0          QIMPF  2.0
PFRPM  0  C0VF   1.0           ITPRF  -9.0         PINF   0.0
PFRPM  0  I1FL   2.0           T1MD   -1.0         T2MD   -1.0
PFRPM  0TDT1CVT GMT           D      GMT
```

MVS TRAJECTORY PROGRAM

2D STUDY

DATED ≈ 3/98

(b)(3)

[redacted]

3/15/04

NOTE: BOEING PROPRIETARY DATA REMOVED

ALT_{MAX} = 16602 FT

Δh = 2842 FT

APPROVED FOR RELEASE
DATE: MAY 2008

```
                RANG          D      RANG
         *   T1MD SECOND AND THIRD VALUES ARE THE NUMBER OF POINTS IN THE
         *   T1VAL TABLE FOLLOWED BY THE INVERSE OF THE SIGMA ACCURACY
         *   (IN THIS CASE IT IS 1/0.05 NAUTICAL MILES).
PFRPM000T T1MD  1.                  7.0                  20.
PFRPM  0  BNDS   200.               1 200.               2 200.
PFRPM  0       3 200.               4 200.               5 200.
PFRPM  0       6 200.               7 200.               8 200.
PFRPM  0       9 200.              10 200.              11 200.
PFRPM  0      12 200.              13 200.              14 200.
ITERM000T ITVT  1.0                  50.                  13.
          D     ARG1T                -4.                  0.001
                0.                   0.                   0.
                0.                   0.                   0.
                2.0                  50.                  13.
          D     ARG1T                -6.                  0.001
                0.                   0.                   0.
                0.                   0.                   0.
                3.0                  50.                  13.
          D     ARG1T                -8.                  0.001
                0.                   0.                   0.
                0.                   0.                   0.
                4.0                  50.                  13.
          D     ARG1T                -10.                 0.001
                0.                   0.                   0.
                0.                   0.                   0.
                5.0                  50.                  13.
          D     ARG1T                -12.                 0.001
                0.                   0.                   0.
                0.                   0.                   0.
                6.0                  50.                  13.
          D     ARG1T                -14.                 0.001
                0.                   0.                   0.
                0.                   0.                   0.
                7.0                  50.                  13.
          D     ARG1T                -16.                 0.001
                0.                   0.                   0.
                0.                   0.                   0.
                8.0                  50.                  13.
          D     ARG1T                -18.                 0.001
                0.                   0.                   0.
                0.                   0.                   0.
                9.0                  50.                  13.
          D     ARG1T                -20.                 0.001
                0.                   0.                   0.
                0.                   0.
ITIFM  0  T1VAL 1.0
ITIFM  0T T1VAL 22.8                 1.90
                27.5                 2.02
                32.2                 2.21
                36.9                 2.39
                41.6                 2.48
                46.3                 2.56
                51.0                 2.51
```

```
ITIFM000T CVRT  1.                      0.                      50.
                0.              D       TC1                     .0
                49.0                    .0                      .0
                .0                      .0                      .0
                2.                      0.                      50.
                0.              D       RANG                    .0
                2.51                    .0                      .0
                .0                      .0                      .0
                3.                      0.                      20.
                0.              D       H                       .0
                17000.                  .0                      .0
                .0                      .0                      .0
PFRPM000  MD1T  1.              MD2T    1.
PFRPM000T MD1T  1.                      1.                      1.0
PFRPM000T MD2T  1.                      1.                      32.
PFRPM000T MD3T  1.                      1.                      0.005
*************************************************************************
*************************************************************************
ENVRM  2T GRAVTT 2.00000000              0.0                    0.00108271604
                  0.0                    3.00000000              0.0
                 -0.2630140E-05          0.0                    4.00000000
                  0.0                   -0.2349500E-05          0.0
SERVM  2 IITPR2T 6
INFXM  2ICTPRI2T 0.3
INFXM  2  TPRV2T 1.
INFXM  2T TPRV2T TC1                    H                       MACH
                 Q                      RANG                    VAMI
                 ALFA                   MAYB
                 GAMA                   LATV                    L0NV
                 ELRLH                  AZRLN                   GMT
                 VDR                    RB1
                 DVDR                   VCAL
                 BANK
                 OMXB                   D0MXB
                 ELR                    BETA
                 MAZB                   MAXB
                 AZR                    RGR
INFXM  2  PL0T2T -1
INFXM  2ICPLIN2T 0.3
INFXM  2T PL0T2T TC1                    H                       MACH
                 Q                      RANG                    VAMI
                 CZ                     CX                      CM
                 FAZB                   FAXB                    OMYB
                 ASZB                   FTXB                    D0MYB
                 ALFA                   MAYB                    IYY
                 GAMA                   LATV                    L0NV
                 ELRLH                  AZRLN                   GMT
                 CXB                    VDR                     RB1
                 CM1T                   CL                      CD
                 ASXB                   DVDR                    VCAL
                 ARGA                   ARGB                    BANK
                 ARGF                   OMXB                    D0MXB
                 ELR                    BETA                    CN
                 MAZB                   MAXB                    ARGC
```

```
                ARGD                    ARGE                    ARGF
                ARGG                    ARGH                    ARGI
                AZR                     RGR
CYCXM  2  DTEA   0.10          Q0P1   1.0          TC1    0.0
CYCXM  2  LFDT1 0.10          TC4    0.0
CYCXM  2  N0ISB  0.0
DPGXM 12 IGCF    0.0          TRKF   0.0
ENVRM  2  ATCF   4.0          ATUF   0.0          AWT    1.0
ENVRM  2  GRVDF  1.0          VWF    -1.0
ENVRM  2I VWT    H      6
                  0.0                    12.0
                  1000.0                 12.0
                  2000.0                 14.0
                  3000.0                 17.0
                  4000.0                 17.0
                  5000.0                 19.0
                  6000.0                 19.0
                  7000.0                 17.0
                  8000.0                 16.0
                  9000.0                 12.0
                  10000.0                12.0
                  11000.0                12.0
                  12000.0                16.0
                  13000.0                16.0
                  14000.0                17.0
                  15000.0                19.0
                  16000.0                21.0
                  17000.0                29.0
                  18000.0                33.0
ENVRM  2I AWT    H      6
                  0.0                    270.0
                  1000.0                 270.0
                  2000.0                 280.0
                  3000.0                 285.0
                  4000.0                 290.0
                  5000.0                 303.0
                  6000.0                 310.0
                  7000.0                 315.0
                  8000.0                 320.0
                  9000.0                 330.0
                  10000.0                335.0
                  11000.0                320.0
                  12000.0                295.0
                  13000.0                290.0
                  14000.0                300.0
                  15000.0                303.0
                  16000.0                305.0
                  17000.0                315.0
                  18000.0                315.0
INTXM  2 INIV    50.0         DTMAX  2.0          INTGF 2.0
PR0PM  2 DL0     U
RM0TM  2  ETA2   0.0          ETA3   70.93        DHI    2
RM0TM  2 DIN     C
SERVM  2 IITPRNT 6.0
```

```
**********  BEFORE BOOM CRUISE VELOCITY=619.05 FT/SEC (366.8 KNOTS).
**********  THIS IS BASED ON IAS=292 KNOTS AND THE ATMOSPHERE AND
**********  AND WINDS USED HERE.
TM0TM  2  AZL   70.93          VAMI0  644.0        DIN     C
TM0TM  2  LATL  40.65          DL0    1            L0NL   -72.67
TM0TM  2  AZVA0 70.93          GAMA0  2.1          HSLL    13760.0
TM0TM  2  ALFA0 4.02559        OMYB0  -0.
TM0TM 10 DL0    1              TMTF   1.00000000   HSLL  0.0
INFXM  2  EVPF   0.00000000    PL0TT -1.00000000
PR0PM 11 DL0    1
TM0TM 12 DL0    1
AERMM  2 DIN    C              DL0    2
AERMM 10 DIN    C              DL0    2
AERMM  2  CLDF  0.0            CNSF   6.0          CMSF  0.0
AERMM  2  CXSF  0.0            CM0MT  0.0
AERMM  2  S     5500.0         RB1    27.31
AERMM  2I CZ1T  ALFA    6      NORMAL FORCE COEFFICIENT
*****************************************************
Boeing proprietary information removed
*****************************************************
AERMM  2  CX1T  -1.0           CZ1T  -1.0          CM1T  0.0
AERMM  2I CX1T  ALFA    6      AXIAL FORCE COEFFICIENT
*****************************************************
Boeing proprietary information removed
*****************************************************
AERMM  2I CM1T  ALFA    6      MOMENT COEFFICIENT
                 -181.0              1.0
                  181.0              1.0
AERMM 13ICCM0MT 1.0
SERVM 13  ARG1T 1.0
SERVM 13I ARG1T TC1     6      CENTER OF PRESSURE (FT) (CG AT 120.67)
                 -100.              120.3
                    0.              119.0253480
                    2.5             120.4804453
                    5.0             120.9063451
                    7.0             121.1161539
                   21.9593068       122.6962042
                   23.7958938       119.7737504
                   27.9065998       119.9909770
                   34.6842718       121.6788974
                   40.              122.2024562
                   50.              122.
SERVM 13I ARG2T ALFA    6      NORMAL FORCE MULTIPLIER
                 -181.0             -1.0
                  181.0             -1.0
SERVM 13I ARG3T ALFA    6      AXIAL FORCE MULTIPLIER
                 -181.0             -1.0
                  181.0             -1.0
SERVM 13I ARG4T TC1     6      AXIAL FORCE BIAS MULTIPLIER
                   0.0               0.0
                   0.5               0.0381
                   1.0               0.1464
                   1.5               0.3087
                   2.0               0.5
```

```
                2.5                     0.6913
                3.0                     0.8535
                3.5                     0.9619
                4.0                     1.0
                100.0                   1.0
********H    NOTE: CX BIAS IS CALCULATED AS ARG1 AND SHIFTED INTO CXB.
********H             USING CXB=-K1*COS(ALFA)-K2*COS(ALFA)**2
********H          ARG2 CALCULATES CM--A2C1=1/RB1, A2C2=CGREF/RB1 AND
********H          ARG1T = CENTER OF PRESSURE (FT)
********H          ARG3 CALCULATES THRUST MULTIPLIER, F(ALFA)
********H          ARG6 CALCULATES RANGE RATE
********H          ARG7 CALCULATES LIFT COEFFICIENT
********H          ARG8 CALCULATES DRAG COEFFICIENT
********H          ARG9 CALCULATES MOMENT COEFF ABOUT 1/4C OF MAC
JUNKM 10 DIN      U             DL0    1
JUNKM 13  VRF1  3.0             DVTBR1 CXB            DRVAR1 ARG1
JUNKM 13  VRF2  3.0             DVTBR2 CM1T           DRVAR2 ARG2
JUNKM 13  VRF3  3.0             DVTBR3 FTT            DRVAR3 ARG3
JUNKM 13  VRF4  3.0             DVTBR4 CZ1T           DRVAR4 ARG4
JUNKM 13  VRF5  3.0             DVTBR5 CX1T           DRVAR5 ARG5
SERVM 13  A1C1  -0.041          DA1V1  ALFA            A1FV1 4.0
SERVM 13  A1C2  -0.025          DA1V3  ALFA            A1FV3 1504.
SERVM 13 DA1V2  ARG4T           DA1V4  ARG4T           A1FV2 9.0
SERVM 13  A1FV4 9.0
SERVM 13  A2C1  0.03662         DA2V1  ARG1T           A2FV1 9.0
SERVM 13  A2C2  -4.4185         DA2V2  CZ             DA2V3  CZ
SERVM 13  A3C1  0.45            DA3V1  ALFA            A3FV1 4.0
SERVM 13  A3C2  0.05            DA3V3  ALFA            A3FV3 1504.
SERVM 13  A3B   0.5
SERVM 13  A4C1  1.0             DA4V1  ARG2T           A4FV1 9.0
SERVM 13  A5C1  1.0             DA5V1  ARG3T           A5FV1 9.0
SERVM 13  A6C1  1.0             DA6V1  VAMI           DA6V2  GAMA
SERVM 13  A6FV2 4.
SERVM 13  A7C1  -1.0            DA7V1  CZ             DA7V2  ALFA
SERVM 13  A7C2  1.0             DA7V3  CX             DA7V4  ALFA
SERVM 13  A7FV2 4.0              A7FV4 3.
SERVM 13  A8C1  -1.0            DA8V1  CZ             DA8V2  ALFA
SERVM 13  A8C2  -1.0            DA8V3  CX             DA8V4  ALFA
SERVM 13  A8FV2 3.0              A8FV4 4.
SERVM 13  A9C1  1.0             DA9V1  CM             DA9V3  CZ
SERVM 13  A9C2  -0.32955
PROPM  2 DIN    C               DL0    U
PROPM  2  WPI   200000.0
STRTM 13  IDW   294606.0
PROPM  2  DWT   1.0
PROPM  2I FTT   TC1    6
                -100.0                  Boeing proprietary information removed
                20000.0                 Boeing proprietary information removed
PROPM  2I DWT   TC1    6
                -100.0                  10.0
                20000.0                 10.0
STRTM  2I IXT   TC1    6
                 -100.0                  Boeing proprietary information removed
                 20000.0                 Boeing proprietary information removed
```

```
 STRTM  2I IYT   TC1    6
                  -100.0              Boeing proprietary information removed
                  20000.0             Boeing proprietary information removed
 STRTM  2I IZT   TC1    6
                  -100.0              Boeing proprietary information removed
                  20000.0             Boeing proprietary information removed
 ********H     FOLLOWING INPUTS CAUSE SWITCH TO BALLISTIC TRAJ  ********
 ********H     ARG3T IS BALLISTIC DRAG COEFFICIENT               ********
 AERMM 30  CZ1T  0.0            CM1T  0.0
 AERMM 30ICCX1T  1.0
 SERVM 30  ARG2T 0.0            ARG3T 0.066          A2C1   0.0
 SERVM 30  A1C1  0.0            A1C2  0.0            CM0MT  0.0
 RM0TM 30 DHI    5             DIN     E             RMTF   1.
 RM0TM 30  OMYB  0.
 DPGXM 30 IGCF   1.
        C        0.0
 ------------------------------------------- CONTROL CARD  0.00 ---------------------------------------
1                          M O D U L A R I Z E D   V E H I C L E   S I M U L A T I O N

                              VERSION: 02.01  NEW REALTIME/PC MVS BASELINE: 2002/11/10

                             13:36:12                  CASE   1                15-03-04


                           ** TYPE OF DATA **                                          SIZE

                            EVENT CRITERIA                                              143
                             TABULAR INPUT                                             1117
                             GENERAL INPUT                                              700
                                    TOTAL                                              1960


 RUN DESCRIPTION -
             RUN SETUP FOR TWA FLIGHT 800 ANALYSIS          ******
             USES BOEING'S SECOND ESTIMATE CL-CD DATA
             AERO CENTER OF PRESSURE IS INPUT (SEE ARG2)
             EVENT 13 STARTS PROBLEM                        ******
             EVENT 30 STARTS POINT MASS (WING BREAK)        ******
             EVENTS 21 MARKS MAXIMUM ALTITUDE               ******
             Forces altitude up using CRVT table            ******
             Uses Rich's 15 Jan 98 radar data               ******
             NOTE: CX BIAS IS CALCULATED AS ARG1 AND SHIFTED INTO CXB.
                   USING CXB=-K1*COS(ALFA)-K2*COS(ALFA)**2
                   ARG2 CALCULATES CM--A2C1=1/RB1, A2C2=CGREF/RB1 AND
                   ARG1T = CENTER OF PRESSURE (FT)
                   ARG3 CALCULATES THRUST MULTIPLIER, F(ALFA)
                   ARG6 CALCULATES RANGE RATE
                   ARG7 CALCULATES LIFT COEFFICIENT
                   ARG8 CALCULATES DRAG COEFFICIENT
                   ARG9 CALCULATES MOMENT COEFF ABOUT 1/4C OF MAC
              FOLLOWING INPUTS CAUSE SWITCH TO BALLISTIC TRAJ  ********
              ARG3T IS BALLISTIC DRAG COEFFICIENT               ********

 %BTO - BEGIN TRAJECTORY OUTPUT
```

```
1  START CASE       1.


-------------------------------------------------------------------------------------------------------
     EVENT ESN     2                                                  DATE / TIME   15-03-04  13:36:12
     TIME =        0.000          TYPE = PRIMARY-ORDERED          CASE = 1.     CP =  0.000   CYCLES =     0.
-------------------------------------------------------------------------------------------------------

   TC1     0.0000E+00 H       13760.0000 MACH  0.588258172 Q       304.150923 RANG   0.1654E-10 VAMI   624.941295 ALFA   3.892323
   MAYB    0.0000E+00 GAMA    2.16407328 LATV   40.6500000 LONV  -72.6700000 ELRLH  6.06344569 AZRLN  70.9108163 GMT    0.0000E+(
   VDR     23.5985484 RB1     27.3100000 DVDR   60.2876608 VCAL   514.300460 BANK   -.180690086 OMXB   0.0000E+00 DOMXB  0.0000E+(
   ELR     13.6404341 BETA    1.87996988 MAZB   0.0000E+00 MAXB   0.0000E+00 AZR    -167.921938 RGR    57898.8039

   TC1     0.0000E+00 H       13760.0000 MACH  0.588258172 Q       304.150923 RANG   0.1654E-10 VAMI   624.941295 ALFA   3.892323
   MAYB    0.0000E+00 GAMA    2.16407328 LATV   40.6500000 LONV  -72.6700000 ELRLH  6.06344569 AZRLN  70.9108163 GMT    0.0000E+(
   VDR     23.5985484 RB1     27.3100000 DVDR   60.2876608 VCAL   514.300460 BANK   -.180690086 OMXB   0.0000E+00 DOMXB  0.0000E+(
   ELR     13.6404341 BETA    1.87996988 MAZB   0.0000E+00 MAXB   0.0000E+00 AZR    -167.921938 RGR    57898.8039


-------------------------------------------------------------------------------------------------------
     EVENT ESN     3                                                  DATE / TIME   15-03-04  13:36:12
     TIME =        0.000          TYPE = PRIMARY-ORDERED          CASE = 1.     CP =  0.016   CYCLES =     0.
           EVENT CAUSED BY
+                                    TLP    =  0.00000000E+00                  TG MODEL - G1
-------------------------------------------------------------------------------------------------------

   TC1     0.0000E+00 H       13760.0000 MACH  0.588258172 Q       304.150923 RANG   0.1654E-10 VAMI   624.941295 ALFA   3.892323
   MAYB    0.0000E+00 GAMA    2.16407328 LATV   40.6500000 LONV  -72.6700000 ELRLH  6.06344569 AZRLN  70.9108163 GMT    0.0000E+(
   VDR     23.5985484 RB1     27.3100000 DVDR   60.2876608 VCAL   514.300460 BANK   -.180690086 OMXB   0.0000E+00 DOMXB  0.0000E+(
   ELR     13.6404341 BETA    1.87996988 MAZB   0.0000E+00 MAXB   0.0000E+00 AZR    -167.921938 RGR    57898.8039

   TC1     0.0000E+00 H       13760.0000 MACH  0.588258172 Q       304.150923 RANG   0.1654E-10 VAMI   624.941295 ALFA   3.892323
   MAYB    0.0000E+00 GAMA    2.16407328 LATV   40.6500000 LONV  -72.6700000 ELRLH  6.06344569 AZRLN  70.9108163 GMT    0.0000E+(
   VDR     23.5985484 RB1     27.3100000 DVDR   60.2876608 VCAL   514.300460 BANK   -.180690086 OMXB   0.0000E+00 DOMXB  0.0000E+(
   ELR     13.6404341 BETA    1.87996988 MAZB   0.0000E+00 MAXB   0.0000E+00 AZR    -167.921938 RGR    57898.8039


-------------------------------------------------------------------------------------------------------
     EVENT ESN    10                                                  DATE / TIME   15-03-04  13:36:12
     TIME =        0.000          TYPE = PRIMARY-ORDERED          CASE = 1.     CP =  0.016   CYCLES =     0.
           EVENT CAUSED BY
+                                    TLP    =  0.00000000E+00                  TG MODEL - G1
-------------------------------------------------------------------------------------------------------

   TC1     0.0000E+00 H       13760.0000 MACH  0.588258172 Q       304.150923 RANG   0.1654E-10 VAMI   624.941295 ALFA   3.892323
   MAYB    0.0000E+00 GAMA    2.16407328 LATV   40.6500000 LONV  -72.6700000 ELRLH  6.06344569 AZRLN  70.9108163 GMT    0.0000E+(
   VDR     23.5985484 RB1     27.3100000 DVDR   60.2876608 VCAL   514.300460 BANK   -.180690086 OMXB   0.0000E+00 DOMXB  0.0000E+(
   ELR     13.6404341 BETA    1.87996988 MAZB   0.0000E+00 MAXB   0.0000E+00 AZR    -167.921938 RGR    57898.8039
```

```
TC1    0.0000E+00 H      13760.0000 MACH  0.588258172 Q      304.150923 RANG   0.1654E-10 VAMI   624.941295 ALFA   3.892323
MAYB   0.0000E+00 GAMA   2.16407328 LATV   40.6500000 LONV  -72.6700000 ELRLH  6.06344569 AZRLN  70.9108163 GMT    0.0000E+(
VDR    23.5985484 RB1    27.3100000 DVDR   60.2876608 VCAL   514.300460 BANK   -.180690086 OMXB   0.0000E+00 DOMXB  0.0000E+(
ELR    13.6404341 BETA   1.87996988 MAZB   0.0000E+00 MAXB   0.0000E+00 AZR    -167.921938 RGR    57898.8039

 ------------------------------------------------------------------------------------------------------------------------
     EVENT ESN   11                                                    DATE / TIME   15-03-04  13:36:12
     TIME =       0.000          TYPE = PRIMARY-ORDERED          CASE = 1.     CP =  0.016   CYCLES =     0.
           EVENT CAUSED BY
+                                    TLP    =  0.00000000E+00                  TG MODEL - G1
 ------------------------------------------------------------------------------------------------------------------------

TC1    0.0000E+00 H      13760.0000 MACH  0.588258172 Q      304.150923 RANG   0.1654E-10 VAMI   624.941295 ALFA   3.892323
MAYB   0.0000E+00 GAMA   2.16407328 LATV   40.6500000 LONV  -72.6700000 ELRLH  6.06344569 AZRLN  70.9108163 GMT    0.0000E+(
VDR    23.5985484 RB1    27.3100000 DVDR   61.4876814 VCAL   514.300460 BANK   -.180690086 OMXB   0.0000E+00 DOMXB  0.0000E+(
ELR    13.6404341 BETA   1.87996988 MAZB   0.0000E+00 MAXB   0.0000E+00 AZR    -167.921938 RGR    57898.8039

TC1    0.0000E+00 H      13760.0000 MACH  0.588258172 Q      304.150923 RANG   0.1654E-10 VAMI   624.941295 ALFA   3.892323
MAYB   0.0000E+00 GAMA   2.16407328 LATV   40.6500000 LONV  -72.6700000 ELRLH  6.06344569 AZRLN  70.9108163 GMT    0.0000E+(
VDR    23.5985484 RB1    27.3100000 DVDR   61.4876814 VCAL   514.300460 BANK   -.180690086 OMXB   0.0000E+00 DOMXB  0.0000E+(
ELR    13.6404341 BETA   1.87996988 MAZB   0.0000E+00 MAXB   0.0000E+00 AZR    -167.921938 RGR    57898.8039

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     EVENT ESN   12                                                    DATE / TIME   15-03-04  13:36:12
     TIME =       0.000          TYPE = PRIMARY-ORDERED          CASE = 1.     CP =  0.031   CYCLES =     0.
           EVENT CAUSED BY
+                                    TLP    =  0.00000000E+00                  TG MODEL - G1
 ------------------------------------------------------------------------------------------------------------------------

TC1    0.0000E+00 H      13760.0000 MACH  0.588258172 Q      304.150923 RANG   0.1654E-10 VAMI   624.941295 ALFA   3.892323
MAYB   0.0000E+00 GAMA   2.16407328 LATV   40.6500000 LONV  -72.6700000 ELRLH  6.06344569 AZRLN  70.9108163 GMT    0.0000E+(
VDR    23.5985484 RB1    27.3100000 DVDR   61.4876814 VCAL   514.300460 BANK   -.180690086 OMXB   0.0000E+00 DOMXB  0.0000E+(
ELR    13.6404341 BETA   1.87996988 MAZB   0.0000E+00 MAXB   0.0000E+00 AZR    -167.921938 RGR    57898.8039

TC1    0.0000E+00 H      13760.0000 MACH  0.588258172 Q      304.150923 RANG   0.1654E-10 VAMI   624.941295 ALFA   3.892323
MAYB   0.0000E+00 GAMA   2.16407328 LATV   40.6500000 LONV  -72.6700000 ELRLH  6.06344569 AZRLN  70.9108163 GMT    0.0000E+(
VDR    23.5985484 RB1    27.3100000 DVDR   61.4876814 VCAL   514.300460 BANK   -.180690086 OMXB   0.0000E+00 DOMXB  0.0000E+(
ELR    13.6404341 BETA   1.87996988 MAZB   0.0000E+00 MAXB   0.0000E+00 AZR    -167.921938 RGR    57898.8039

 ------------------------------------------------------------------------------------------------------------------------
     EVENT ESN   13                                                    DATE / TIME   15-03-04  13:36:12
     TIME =       0.000          TYPE = PRIMARY-ORDERED          CASE = 1.     CP =  0.031   CYCLES =     0.
           EVENT CAUSED BY
+                                    TLP    =  0.00000000E+00                  TG MODEL - G1
```

TC1	0.0000E+00	H	13760.0000	MACH	0.588258172	Q	304.150923	RANG	0.1654E-10	VAMI	624.941295	ALFA	3.892323
MAYB	-942571.002	GAMA	2.16407328	LATV	40.6500000	LONV	-72.6700000	ELRLH	6.06344569	AZRLN	70.9108163	GMT	0.0000E+0
VDR	23.5985484	RB1	27.3100000	DVDR	5.78457828	VCAL	514.300460	BANK	-.180690086	OMXB	0.0000E+00	DOMXB	0.0000E+0
ELR	13.6404341	BETA	1.87996988	MAZB	0.0000E+00	MAXB	0.0000E+00	AZR	-167.921938	RGR	57898.8039		
TC1	0.300000000	H	13767.5385	MACH	0.588457222	Q	304.265351	RANG	0.031745471	VAMI	625.134888	ALFA	3.889433
MAYB	-841418.479	GAMA	2.31605065	LATV	40.6501730	LONV	-72.6693428	ELRLH	6.21263293	AZRLN	70.9115535	GMT	0.3000000
VDR	25.2627648	RB1	27.3100000	DVDR	5.75561857	VCAL	514.406426	BANK	-.181054113	OMXB	0.0000E+00	DOMXB	0.0000E+0
ELR	13.6712131	BETA	1.88171437	MAZB	0.0000E+00	MAXB	0.0000E+00	AZR	-168.090568	RGR	57803.9537		
TC1	0.600000000	H	13775.6115	MACH	0.588563057	Q	304.276873	RANG	0.063493798	VAMI	625.228179	ALFA	4.130056
MAYB	-783980.799	GAMA	2.50004841	LATV	40.6503461	LONV	-72.6686855	ELRLH	6.63737332	AZRLN	70.9114104	GMT	0.6000000
VDR	27.2725979	RB1	27.3100000	DVDR	7.93136262	VCAL	514.423154	BANK	-.181518987	OMXB	0.0000E+00	DOMXB	0.0000E+0
ELR	13.7024930	BETA	1.88399061	MAZB	0.0000E+00	MAXB	0.0000E+00	AZR	-168.259813	RGR	57709.7185		
TC1	0.900000000	H	13784.4095	MACH	0.588494628	Q	304.099449	RANG	0.095236241	VAMI	625.134628	ALFA	4.5434711
MAYB	-740430.911	GAMA	2.76623554	LATV	40.6505191	LONV	-72.6680283	ELRLH	7.31714418	AZRLN	70.9104435	GMT	0.9000000
VDR	30.1697248	RB1	27.3100000	DVDR	11.5932708	VCAL	514.275800	BANK	-.182096845	OMXB	0.0000E+00	DOMXB	0.0000E+0
ELR	13.7344517	BETA	1.88714148	MAZB	0.0000E+00	MAXB	0.0000E+00	AZR	-168.429626	RGR	57616.1738		
TC1	1.20000000	H	13794.2583	MACH	0.588180408	Q	303.655544	RANG	0.126958420	VAMI	624.777508	ALFA	5.079298
MAYB	-692170.301	GAMA	3.14981702	LATV	40.6506920	LONV	-72.6673715	ELRLH	8.23679304	AZRLN	70.9086893	GMT	1.200000
VDR	34.3296441	RB1	27.3100000	DVDR	16.2686386	VCAL	513.896845	BANK	-.182811243	OMXB	0.0000E+00	DOMXB	0.0000E+0
ELR	13.7673954	BETA	1.89154089	MAZB	0.0000E+00	MAXB	0.0000E+00	AZR	-168.599929	RGR	57523.4443		
TC1	1.50000000	H	13805.5756	MACH	0.587518352	Q	302.835662	RANG	0.158639331	VAMI	624.047470	ALFA	5.697861
MAYB	-626108.841	GAMA	3.67426402	LATV	40.6508646	LONV	-72.6667156	ELRLH	9.38013285	AZRLN	70.9061842	GMT	1.500000
VDR	39.9914958	RB1	27.3100000	DVDR	21.5471312	VCAL	513.190497	BANK	-.183693151	OMXB	0.0000E+00	DOMXB	0.0000E+0
ELR	13.8017159	BETA	1.89770640	MAZB	0.0000E+00	MAXB	0.0000E+00	AZR	-168.770607	RGR	57431.6968		
TC1	1.80000000	H	13818.8325	MACH	0.586428829	Q	301.554073	RANG	0.190250934	VAMI	622.858884	ALFA	6.364757
MAYB	-532639.321	GAMA	4.35231745	LATV	40.6510369	LONV	-72.6660612	ELRLH	10.7255162	AZRLN	70.9029781	GMT	1.800000
VDR	47.2682854	RB1	27.3100000	DVDR	26.9214556	VCAL	512.080822	BANK	-.184776453	OMXB	0.0000E+00	DOMXB	0.0000E+0
ELR	13.8378539	BETA	1.90611750	MAZB	0.0000E+00	MAXB	0.0000E+00	AZR	-168.941505	RGR	57341.1313		
TC1	2.10000000	H	13834.5105	MACH	0.584851465	Q	299.746563	RANG	0.221758527	VAMI	621.146586	ALFA	7.049438
MAYB	-408351.308	GAMA	5.18427553	LATV	40.6512086	LONV	-72.6654088	ELRLH	12.2427019	AZRLN	70.8991456	GMT	2.100000
VDR	56.1263474	RB1	27.3100000	DVDR	32.0824406	VCAL	510.509388	BANK	-.186091926	OMXB	0.0000E+00	DOMXB	0.0000E+0
ELR	13.8762581	BETA	1.91721129	MAZB	0.0000E+00	MAXB	0.0000E+00	AZR	-169.112430	RGR	57251.9695		
TC1	2.40000000	H	13853.0713	MACH	0.582738376	Q	297.364277	RANG	0.253121632	VAMI	618.858779	ALFA	7.716066
MAYB	-253266.238	GAMA	6.16576231	LATV	40.6513795	LONV	-72.6647595	ELRLH	13.8914858	AZRLN	70.8947921	GMT	2.400000
VDR	66.4686950	RB1	27.3100000	DVDR	36.7544645	VCAL	508.429518	BANK	-.187659890	OMXB	0.0000E+00	DOMXB	0.0000E+0
ELR	13.9173557	BETA	1.93139578	MAZB	0.0000E+00	MAXB	0.0000E+00	AZR	-169.283156	RGR	57164.4445		
TC1	2.70000000	H	13874.9285	MACH	0.580055018	Q	294.375243	RANG	0.284294533	VAMI	615.958005	ALFA	8.336018
MAYB	-162227.512	GAMA	7.27743759	LATV	40.6515494	LONV	-72.6641141	ELRLH	15.6239079	AZRLN	70.8900508	GMT	2.700000
VDR	78.0258657	RB1	27.3100000	DVDR	39.7766586	VCAL	505.807394	BANK	-.189483983	OMXB	0.0000E+00	DOMXB	0.0000E+0
ELR	13.9615259	BETA	1.94903873	MAZB	0.0000E+00	MAXB	0.0000E+00	AZR	-169.453423	RGR	57078.7918		
TC1	3.00000000	H	13900.3579	MACH	0.576766115	Q	290.751372	RANG	0.315228578	VAMI	612.406423	ALFA	8.925200
MAYB	-108033.094	GAMA	8.47265388	LATV	40.6517180	LONV	-72.6634737	ELRLH	17.4092150	AZRLN	70.8850000	GMT	3.000000

VDR	90.2303439	RB1	27.3100000	DVDR	41.4940571	VCAL	502.610303	BANK	-.191569277	OMXB	0.0000E+00	D0MXB	0.0000E+(
ELR	14.0090126	BETA	1.97047913	MAZB	0.0000E+00	MAXB	0.0000E+00	AZR	-169.622954	RGR	56995.2204		
TC1	3.30000000	H	13929.5165	MACH	0.572902643	Q	286.535621	RANG	0.345874368	VAMI	608.236884	ALFA	9.4795822
MAYB	-49637.0723	GAMA	9.73760341	LATV	40.6518850	LONV	-72.6628393	ELRLH	19.2295763	AZRLN	70.8796761	GMT	3.300000(
VDR	102.874914	RB1	27.3100000	DVDR	42.7068425	VCAL	498.866571	BANK	-.193924935	OMXB	0.0000E+00	D0MXB	0.0000E+(
ELR	14.0599447	BETA	1.99580731	MAZB	0.0000E+00	MAXB	0.0000E+00	AZR	-169.791462	RGR	56913.9106		
TC1	3.60000000	H	13962.5122	MACH	0.568514666	Q	281.791802	RANG	0.376184242	VAMI	603.502660	ALFA	9.9902927
MAYB	11907.3093	GAMA	11.0621668	LATV	40.6520503	LONV	-72.6622118	ELRLH	21.0660124	AZRLN	70.8741216	GMT	3.600000(
VDR	115.796448	RB1	27.3100000	DVDR	43.3588537	VCAL	494.622335	BANK	-.196552618	OMXB	0.0000E+00	D0MXB	0.0000E+(
ELR	14.1144039	BETA	2.02504290	MAZB	0.0000E+00	MAXB	0.0000E+00	AZR	-169.958669	RGR	56835.0235		
TC1	3.90000000	H	13999.4021	MACH	0.563674934	Q	276.606782	RANG	0.406113147	VAMI	598.281247	ALFA	10.44928(
MAYB	75355.2935	GAMA	12.4343656	LATV	40.6522134	LONV	-72.6615922	ELRLH	22.8985087	AZRLN	70.8683871	GMT	3.900000(
VDR	128.822570	RB1	27.3100000	DVDR	43.3865178	VCAL	489.944622	BANK	-.199444707	OMXB	0.0000E+00	D0MXB	0.0000E+(
ELR	14.1724244	BETA	2.05811107	MAZB	0.0000E+00	MAXB	0.0000E+00	AZR	-170.124306	RGR	56758.6983		
TC1	4.20000000	H	14040.1893	MACH	0.558297151	Q	270.912341	RANG	0.435619913	VAMI	592.481483	ALFA	10.84610(
MAYB	139351.550	GAMA	13.8440348	LATV	40.6523743	LONV	-72.6609813	ELRLH	24.7064164	AZRLN	70.8625320	GMT	4.200000(
VDR	141.768824	RB1	27.3100000	DVDR	42.8439453	VCAL	484.758833	BANK	-.202582854	OMXB	0.0000E+00	D0MXB	0.0000E+(
ELR	14.2339893	BETA	2.09156606	MAZB	0.0000E+00	MAXB	0.0000E+00	AZR	-170.288123	RGR	56685.0479		
TC1	4.50000000	H	14084.8256	MACH	0.552580020	Q	264.919485	RANG	0.464667895	VAMI	586.314827	ALFA	11.17492(
MAYB	202668.624	GAMA	15.2761183	LATV	40.6525328	LONV	-72.6603800	ELRLH	26.4688855	AZRLN	70.8566249	GMT	4.500000(
VDR	154.476945	RB1	27.3100000	DVDR	41.7920599	VCAL	479.245728	BANK	-.205936782	OMXB	0.0000E+00	D0MXB	0.0000E+(
ELR	14.2990341	BETA	2.12834255	MAZB	0.0000E+00	MAXB	0.0000E+00	AZR	-170.449894	RGR	56614.1576		
TC1	4.80000000	H	14133.2162	MACH	0.546578786	Q	258.695720	RANG	0.493225412	VAMI	579.840539	ALFA	11.42800(
MAYB	264073.401	GAMA	16.7177012	LATV	40.6526885	LONV	-72.6597888	ELRLH	28.1652714	AZRLN	70.8507447	GMT	4.800000(
VDR	166.794854	RB1	27.3100000	DVDR	40.2498801	VCAL	473.457842	BANK	-.209463430	OMXB	0.0000E+00	D0MXB	0.0000E+(
ELR	14.3674509	BETA	2.16843123	MAZB	0.0000E+00	MAXB	0.0000E+00	AZR	-170.609417	RGR	56546.0855		
TC1	5.10000000	H	14185.2227	MACH	0.540350502	Q	252.308497	RANG	0.521265957	VAMI	573.119870	ALFA	11.59858
MAYB	314427.943	GAMA	18.1555409	LATV	40.6528415	LONV	-72.6592083	ELRLH	29.7755826	AZRLN	70.8449797	GMT	5.100000(
VDR	178.582825	RB1	27.3100000	DVDR	38.2686643	VCAL	467.449491	BANK	-.213106747	OMXB	0.0000E+00	D0MXB	0.0000E+(
ELR	14.4390916	BETA	2.21173272	MAZB	0.0000E+00	MAXB	0.0000E+00	AZR	-170.766519	RGR	56480.8627		
TC1	5.40000000	H	14240.6670	MACH	0.533955532	Q	245.826059	RANG	0.548769002	VAMI	566.217624	ALFA	11.68374
MAYB	345404.800	GAMA	19.5764240	LATV	40.6529915	LONV	-72.6586390	ELRLH	31.2836820	AZRLN	70.8394152	GMT	5.400000(
VDR	189.719088	RB1	27.3100000	DVDR	35.9189841	VCAL	461.277965	BANK	-.216804662	OMXB	0.0000E+00	D0MXB	0.0000E+(
ELR	14.5137721	BETA	2.25810476	MAZB	0.0000E+00	MAXB	0.0000E+00	AZR	-170.921058	RGR	56418.4920		
TC1	5.70000000	H	14299.3383	MACH	0.527452828	Q	239.312554	RANG	0.575720431	VAMI	559.197127	ALFA	11.68537
MAYB	372755.773	GAMA	20.9679054	LATV	40.6531386	LONV	-72.6580811	ELRLH	32.6790269	AZRLN	70.8341234	GMT	5.700000(
VDR	200.105863	RB1	27.3100000	DVDR	33.2857154	VCAL	454.999200	BANK	-.220496322	OMXB	0.0000E+00	D0MXB	0.0000E+(
ELR	14.5912792	BETA	2.30737692	MAZB	0.0000E+00	MAXB	0.0000E+00	AZR	-171.072928	RGR	56358.9491		
TC1	6.00000000	H	14361.0001	MACH	0.520897290	Q	232.825461	RANG	0.602112571	VAMI	552.117393	ALFA	11.60589
MAYB	396205.805	GAMA	22.3185857	LATV	40.6532826	LONV	-72.6575348	ELRLH	33.9526381	AZRLN	70.8291780	GMT	6.000000(
VDR	209.670037	RB1	27.3100000	DVDR	30.4471403	VCAL	448.665323	BANK	-.224116435	OMXB	0.0000E+00	D0MXB	0.0000E+(
ELR	14.6713778	BETA	2.35936020	MAZB	0.0000E+00	MAXB	0.0000E+00	AZR	-171.222059	RGR	56302.1837		
TC1	6.30000000	H	14425.3974	MACH	0.514338770	Q	226.414772	RANG	0.627944012	VAMI	545.032051	ALFA	11.44798

MAYB	415579.563	GAMA	23.6180747	LATV	40.6534236	LONV	-72.6570000	ELRLH	35.0968033	AZRLN	70.8246547	GMT	6.300000(
VDR	218.360600	RB1	27.3100000	DVDR	27.4721963	VCAL	442.323707	BANK	-.227596472	OMXB	0.0000E+00	DOMXB	0.0000E+(
ELR	14.7538178	BETA	2.41385162	MAZB	0.0000E+00	MAXB	0.0000E+00	AZR	-171.368417	RGR	56248.1232		
TC1	6.60000000	H	14492.2630	MACH	0.507821390	Q	220.122616	RANG	0.653219274	VAMI	537.988608	ALFA	11.21469
MAYB	430791.257	GAMA	24.8569474	LATV	40.6535616	LONV	-72.6564769	ELRLH	36.1051357	AZRLN	70.8206279	GMT	6.600000(
VDR	226.145735	RB1	27.3100000	DVDR	24.4198210	VCAL	436.016321	BANK	-.230867072	OMXB	0.0000E+00	DOMXB	0.0000E+(
ELR	14.8383403	BETA	2.47063874	MAZB	0.0000E+00	MAXB	0.0000E+00	AZR	-171.512001	RGR	56196.6743		
TC1	6.90000000	H	14561.3227	MACH	0.501383112	Q	213.983234	RANG	0.677948355	VAMI	531.027989	ALFA	10.90950(
MAYB	441833.878	GAMA	26.0267052	LATV	40.6536966	LONV	-72.6559650	ELRLH	36.9726038	AZRLN	70.8171689	GMT	6.900000(
VDR	233.009782	RB1	27.3100000	DVDR	21.3388252	VCAL	429.779346	BANK	-.233860787	OMXB	0.0000E+00	DOMXB	0.0000E+(
ELR	14.9246821	BETA	2.52950418	MAZB	0.0000E+00	MAXB	0.0000E+00	AZR	-171.652844	RGR	56147.7267		
TC1	7.20000000	H	14632.2994	MACH	0.495055554	Q	208.023236	RANG	0.702146197	VAMI	524.184326	ALFA	10.53634(
MAYB	448902.981	GAMA	27.1197385	LATV	40.6538287	LONV	-72.6554641	ELRLH	37.6955314	AZRLN	70.8143425	GMT	7.200000(
VDR	238.950243	RB1	27.3100000	DVDR	18.2682260	VCAL	423.643013	BANK	-.236514992	OMXB	0.0000E+00	DOMXB	0.0000E+(
ELR	15.0125806	BETA	2.59023011	MAZB	0.0000E+00	MAXB	0.0000E+00	AZR	-171.791007	RGR	56101.1555		
TC1	7.50000000	H	14704.9173	MACH	0.488864022	Q	202.262087	RANG	0.725832092	VAMI	517.485003	ALFA	10.09961
MAYB	452029.991	GAMA	28.1292923	LATV	40.6539580	LONV	-72.6549739	ELRLH	38.2715459	AZRLN	70.8122046	GMT	7.500000(
VDR	243.974931	RB1	27.3100000	DVDR	15.2378941	VCAL	417.631659	BANK	-.238774657	OMXB	0.0000E+00	DOMXB	0.0000E+(
ELR	15.1017759	BETA	2.65260227	MAZB	0.0000E+00	MAXB	0.0000E+00	AZR	-171.926578	RGR	56056.8241		
TC1	7.80000000	H	14778.9032	MACH	0.482823950	Q	196.709684	RANG	0.749029054	VAMI	510.946888	ALFA	9.604954
MAYB	450895.885	GAMA	29.0486893	LATV	40.6540847	LONV	-72.6544937	ELRLH	38.6995694	AZRLN	70.8107994	GMT	7.800000(
VDR	248.091634	RB1	27.3100000	DVDR	12.2041744	VCAL	411.760670	BANK	-.240595045	OMXB	0.0000E+00	DOMXB	0.0000E+(
ELR	15.1920139	BETA	2.71643470	MAZB	0.0000E+00	MAXB	0.0000E+00	AZR	-172.059669	RGR	56014.5864		
TC1	8.10000000	H	14853.9851	MACH	0.476939947	Q	191.366310	RANG	0.771763150	VAMI	504.575346	ALFA	9.059361
MAYB	445980.605	GAMA	29.8712262	LATV	40.6542089	LONV	-72.6540232	ELRLH	38.9798842	AZRLN	70.8101569	GMT	8.100000(
VDR	251.304923	RB1	27.3100000	DVDR	9.23125592	VCAL	406.035762	BANK	-.241944238	OMXB	0.0000E+00	DOMXB	0.0000E+(
ELR	15.2830425	BETA	2.78158275	MAZB	0.0000E+00	MAXB	0.0000E+00	AZR	-172.190408	RGR	55974.2885		
TC1	8.40000000	H	14929.8956	MACH	0.471218776	Q	186.233582	RANG	0.794062855	VAMI	498.377974	ALFA	8.468732
MAYB	437640.827	GAMA	30.5925781	LATV	40.6543306	LONV	-72.6535616	ELRLH	39.1140314	AZRLN	70.8102914	GMT	8.400000(
VDR	253.639460	RB1	27.3100000	DVDR	6.34719573	VCAL	400.464334	BANK	-.242804457	OMXB	0.0000E+00	DOMXB	0.0000E+(
ELR	15.3746165	BETA	2.84787655	MAZB	0.0000E+00	MAXB	0.0000E+00	AZR	-172.318941	RGR	55935.7714		
TC1	8.70000000	H	15006.3752	MACH	0.465659286	Q	181.306508	RANG	0.815958457	VAMI	492.353954	ALFA	7.840230
MAYB	423715.461	GAMA	31.2082937	LATV	40.6544502	LONV	-72.6531084	ELRLH	39.1046807	AZRLN	70.8112018	GMT	8.700000(
VDR	255.113605	RB1	27.3100000	DVDR	3.31952457	VCAL	395.046708	BANK	-.243172458	OMXB	0.0000E+00	DOMXB	0.0000E+(
ELR	15.4664990	BETA	2.91492687	MAZB	0.0000E+00	MAXB	0.0000E+00	AZR	-172.445428	RGR	55898.8735		
TC1	9.00000000	H	15083.1465	MACH	0.460204148	Q	176.537137	RANG	0.837483233	VAMI	486.443092	ALFA	7.202843
MAYB	400086.357	GAMA	31.6940827	LATV	40.6545678	LONV	-72.6526629	ELRLH	38.9563676	AZRLN	70.8128669	GMT	9.000000(
VDR	255.569310	RB1	27.3100000	DVDR	-.240859640	VCAL	389.734657	BANK	-.243062054	OMXB	0.0000E+00	DOMXB	0.0000E+(
ELR	15.5584380	BETA	2.98032425	MAZB	0.0000E+00	MAXB	0.0000E+00	AZR	-172.570045	RGR	55863.4207		
TC1	9.30000000	H	15159.8957	MACH	0.454857203	Q	171.926549	RANG	0.858673943	VAMI	480.649950	ALFA	6.573410
MAYB	374850.303	GAMA	32.0404383	LATV	40.6546835	LONV	-72.6522243	ELRLH	38.6764585	AZRLN	70.8152416	GMT	9.300000(
VDR	254.993291	RB1	27.3100000	DVDR	-3.56037081	VCAL	384.533348	BANK	-.242506396	OMXB	0.0000E+00	DOMXB	0.0000E+(
ELR	15.6501481	BETA	3.04667573	MAZB	0.0000E+00	MAXB	0.0000E+00	AZR	-172.692991	RGR	55829.2202		

TC1	9.60000000	H	15236.3242	MACH	0.449608953	Q	167.465479	RANG	0.879566562	VAMI	474.964934	ALFA	5.956413
MAYB	348368.737	GAMA	32.2511405	LATV	40.6547976	LONV	-72.6517918	ELRLH	38.2731849	AZRLN	70.8182690	GMT	9.600000
VDR	253.456179	RB1	27.3100000	DVDR	-6.65414710	VCAL	379.436207	BANK	-.241549211	OMXB	0.0000E+00	D0MXB	0.0000E+0
ELR	15.7413582	BETA	3.11390561	MAZB	0.0000E+00	MAXB	0.0000E+00	AZR	-172.814465	RGR	55796.0852		
TC1	9.90000000	H	15312.1530	MACH	0.444457827	Q	163.150663	RANG	0.900195677	VAMI	469.386779	ALFA	5.358303
MAYB	320102.046	GAMA	32.3284613	LATV	40.6549103	LONV	-72.6513649	ELRLH	37.7552303	AZRLN	70.8218850	GMT	9.900000
VDR	251.014982	RB1	27.3100000	DVDR	-9.58095303	VCAL	374.443299	BANK	-.240241033	OMXB	0.0000E+00	D0MXB	0.0000E+0
ELR	15.8318158	BETA	3.18188911	MAZB	0.0000E+00	MAXB	0.0000E+00	AZR	-172.934656	RGR	55763.8380		
TC1	10.2000000	H	15387.1198	MACH	0.439401853	Q	158.978417	RANG	0.920594660	VAMI	463.913745	ALFA	4.784404
MAYB	291768.953	GAMA	32.2762748	LATV	40.6550217	LONV	-72.6509426	ELRLH	37.1317616	AZRLN	70.8260205	GMT	10.20000
VDR	247.731005	RB1	27.3100000	DVDR	-12.2743370	VCAL	369.554145	BANK	-.238636910	OMXB	0.0000E+00	D0MXB	0.0000E+0
ELR	15.9212840	BETA	3.25050437	MAZB	0.0000E+00	MAXB	0.0000E+00	AZR	-173.053750	RGR	55732.3089		
TC1	10.5000000	H	15460.9822	MACH	0.434436337	Q	154.943007	RANG	0.940794588	VAMI	458.541168	ALFA	4.237906
MAYB	263761.106	GAMA	32.1006914	LATV	40.6551320	LONV	-72.6505245	ELRLH	36.4120540	AZRLN	70.8306051	GMT	10.50000
VDR	243.672812	RB1	27.3100000	DVDR	-14.7438173	VCAL	364.765724	BANK	-.236792957	OMXB	0.0000E+00	D0MXB	0.0000E+0
ELR	16.0095442	BETA	3.31965264	MAZB	0.0000E+00	MAXB	0.0000E+00	AZR	-173.171922	RGR	55701.3394		
TC1	10.8000000	H	15533.5182	MACH	0.429563552	Q	151.043618	RANG	0.960823958	VAMI	453.271687	ALFA	3.721875
MAYB	236051.267	GAMA	31.8078499	LATV	40.6552413	LONV	-72.6501099	ELRLH	35.6052886	AZRLN	70.8355701	GMT	10.80000
VDR	238.906920	RB1	27.3100000	DVDR	-16.9899658	VCAL	360.080789	BANK	-.234763898	OMXB	0.0000E+00	D0MXB	0.0000E+0
ELR	16.0963960	BETA	3.38918581	MAZB	0.0000E+00	MAXB	0.0000E+00	AZR	-173.289331	RGR	55670.7838		
TC1	11.1000000	H	15604.5257	MACH	0.424804496	Q	147.292184	RANG	0.980709397	VAMI	448.127643	ALFA	3.239929
MAYB	209153.009	GAMA	31.4032272	LATV	40.6553499	LONV	-72.6496983	ELRLH	34.7205317	AZRLN	70.8408501	GMT	11.10000
VDR	233.500362	RB1	27.3100000	DVDR	-19.0193896	VCAL	355.517844	BANK	-.232601602	OMXB	0.0000E+00	D0MXB	0.0000E+0
ELR	16.1816573	BETA	3.45880239	MAZB	0.0000E+00	MAXB	0.0000E+00	AZR	-173.406128	RGR	55640.5067		
TC1	11.4000000	H	15673.8222	MACH	0.420161593	Q	143.687020	RANG	1.00047541	VAMI	443.111723	ALFA	2.793857
MAYB	183684.923	GAMA	30.8938738	LATV	40.6554577	LONV	-72.6492891	ELRLH	33.7666083	AZRLN	70.8463838	GMT	11.40000
VDR	227.515494	RB1	27.3100000	DVDR	-20.8468574	VCAL	351.079268	BANK	-.230353736	OMXB	0.0000E+00	D0MXB	0.0000E+0
ELR	16.2651640	BETA	3.52833730	MAZB	0.0000E+00	MAXB	0.0000E+00	AZR	-173.522453	RGR	55610.3839		
TC1	11.7000000	H	15741.2433	MACH	0.415636460	Q	140.225747	RANG	1.02014365	VAMI	438.225715	ALFA	2.384767
MAYB	159861.499	GAMA	30.2870652	LATV	40.6555651	LONV	-72.6488820	ELRLH	32.7518887	AZRLN	70.8521165	GMT	11.70000
VDR	221.011556	RB1	27.3100000	DVDR	-22.4813095	VCAL	346.766577	BANK	-.228062622	OMXB	0.0000E+00	D0MXB	0.0000E+0
ELR	16.3467677	BETA	3.59763135	MAZB	0.0000E+00	MAXB	0.0000E+00	AZR	-173.638428	RGR	55580.3035		
TC1	12.0000000	H	15806.6418	MACH	0.411232711	Q	136.907234	RANG	1.03973308	VAMI	433.473478	ALFA	2.013273
MAYB	137851.230	GAMA	29.5900314	LATV	40.6556719	LONV	-72.6484765	ELRLH	31.6842103	AZRLN	70.8579995	GMT	12.00000
VDR	214.045120	RB1	27.3100000	DVDR	-23.9316678	VCAL	342.582830	BANK	-.225764895	OMXB	0.0000E+00	D0MXB	0.0000E+0
ELR	16.4263352	BETA	3.66650746	MAZB	0.0000E+00	MAXB	0.0000E+00	AZR	-173.754163	RGR	55550.1661		
TC1	12.3000000	H	15869.8878	MACH	0.406961745	Q	133.735331	RANG	1.05926015	VAMI	428.867038	ALFA	1.679491
MAYB	117767.029	GAMA	28.8099136	LATV	40.6557784	LONV	-72.6480722	ELRLH	30.5708217	AZRLN	70.8639911	GMT	12.30000
VDR	206.673295	RB1	27.3100000	DVDR	-25.1854739	VCAL	338.537529	BANK	-.223491503	OMXB	0.0000E+00	D0MXB	0.0000E+0
ELR	16.5037482	BETA	3.73471521	MAZB	0.0000E+00	MAXB	0.0000E+00	AZR	-173.869753	RGR	55519.8830		
TC1	12.6000000	H	15930.8678	MACH	0.402835805	Q	130.714071	RANG	1.07873935	VAMI	424.419269	ALFA	1.383059
MAYB	99698.8804	GAMA	27.9536985	LATV	40.6558846	LONV	-72.6476690	ELRLH	29.4183432	AZRLN	70.8700559	GMT	12.60000
VDR	198.949880	RB1	27.3100000	DVDR	-26.2780338	VCAL	334.640704	BANK	-.221267963	OMXB	0.0000E+00	D0MXB	0.0000E+0
ELR	16.5789033	BETA	3.80198694	MAZB	0.0000E+00	MAXB	0.0000E+00	AZR	-173.985280	RGR	55489.3762		

TC1	12.9000000	H	15989.4837	MACH	0.398860414	Q	127.842846	RANG	1.09818306	VAMI	420.135928	ALFA	1.123192E
MAYB	83678.4814	GAMA	27.0281353	LATV	40.6559906	LONV	-72.6472664	ELRLH	28.2327388	AZRLN	70.8761646	GMT	12.90000(
VDR	190.921519	RB1	27.3100000	DVDR	-27.2201145	VCAL	330.896556	BANK	-.219114767	OMXB	0.0000E+00	DOMXB	0.0000E+0(
ELR	16.6517105	BETA	3.86810986	MAZB	0.0000E+00	MAXB	0.0000E+00	AZR	-174.100817	RGR	55458.5771		
TC1	13.2000000	H	16045.6505	MACH	0.395004253	Q	125.097642	RANG	1.11760167	VAMI	415.983950	ALFA	0.8937160E
MAYB	69361.8866	GAMA	26.0420276	LATV	40.6560965	LONV	-72.6468644	ELRLH	27.0193137	AZRLN	70.8822934	GMT	13.20000(
VDR	182.629563	RB1	27.3100000	DVDR	-28.0396001	VCAL	327.278144	BANK	-.217047932	OMXB	0.0000E+00	DOMXB	0.0000E+0(
ELR	16.7220912	BETA	4.00346629	MAZB	0.0000E+00	MAXB	0.0000E+00	AZR	-174.216425	RGR	55427.4263		
TC1	13.5000000	H	16099.2946	MACH	0.391315726	Q	122.505398	RANG	1.13700389	VAMI	412.014224	ALFA	0.6989978E
MAYB	57108.3627	GAMA	24.9979634	LATV	40.6562022	LONV	-72.6464627	ELRLH	25.7827829	AZRLN	70.8884234	GMT	13.50000(
VDR	174.111462	RB1	27.3100000	DVDR	-28.7257702	VCAL	323.825706	BANK	-.215079682	OMXB	0.0000E+00	DOMXB	0.0000E+0(
ELR	16.7899768	BETA	4.15163045	MAZB	0.0000E+00	MAXB	0.0000E+00	AZR	-174.332154	RGR	55395.8724		
TC1	13.8000000	H	16150.3542	MACH	0.387810297	Q	120.071382	RANG	1.15639687	VAMI	408.242907	ALFA	0.5381046(
MAYB	46911.4348	GAMA	23.9016030	LATV	40.6563078	LONV	-72.6460612	ELRLH	24.5272128	AZRLN	70.8945402	GMT	13.80000(
VDR	165.406621	RB1	27.3100000	DVDR	-29.2866944	VCAL	320.551519	BANK	-.213218876	OMXB	0.0000E+00	DOMXB	0.0000E+0(
ELR	16.8553087	BETA	4.29593795	MAZB	0.0000E+00	MAXB	0.0000E+00	AZR	-174.448047	RGR	55363.8712		
TC1	14.1000000	H	16198.7788	MACH	0.384493527	Q	117.794558	RANG	1.17578641	VAMI	404.675706	ALFA	0.4084850E
MAYB	38648.6851	GAMA	22.7589256	LATV	40.6564134	LONV	-72.6456597	ELRLH	23.2559953	AZRLN	70.9006336	GMT	14.10000(
VDR	156.550666	RB1	27.3100000	DVDR	-29.7353652	VCAL	317.459448	BANK	-.211471498	OMXB	0.0000E+00	DOMXB	0.0000E+0(
ELR	16.9180386	BETA	4.43577654	MAZB	0.0000E+00	MAXB	0.0000E+00	AZR	-174.564137	RGR	55331.3859		
TC1	14.4000000	H	16244.5279	MACH	0.381370699	Q	115.673800	RANG	1.19517710	VAMI	401.318029	ALFA	0.3073731(
MAYB	32177.6637	GAMA	21.5754813	LATV	40.6565189	LONV	-72.6452582	ELRLH	21.9718870	AZRLN	70.9066968	GMT	14.40000(
VDR	147.575330	RB1	27.3100000	DVDR	-30.0847145	VCAL	314.553088	BANK	-.209841225	OMXB	0.0000E+00	DOMXB	0.0000E+0(
ELR	16.9781270	BETA	4.57055076	MAZB	0.0000E+00	MAXB	0.0000E+00	AZR	-174.680451	RGR	55298.3856		
TC1	14.7000000	H	16287.5701	MACH	0.378446678	Q	113.707847	RANG	1.21457262	VAMI	398.174837	ALFA	0.2318388[
MAYB	27340.2033	GAMA	20.3563856	LATV	40.6566245	LONV	-72.6448566	ELRLH	20.6770550	AZRLN	70.9127262	GMT	14.70000(
VDR	138.508491	RB1	27.3100000	DVDR	-30.3474838	VCAL	311.835662	BANK	-.208329944	OMXB	0.0000E+00	DOMXB	0.0000E+0(
ELR	17.0355422	BETA	4.69968649	MAZB	0.0000E+00	MAXB	0.0000E+00	AZR	-174.797013	RGR	55264.8448		
TC1	15.0000000	H	16327.8815	MACH	0.375725822	Q	111.895277	RANG	1.23397583	VAMI	395.250551	ALFA	0.1788394[
MAYB	23966.4230	GAMA	19.1063199	LATV	40.6567300	LONV	-72.6444548	ELRLH	19.3731280	AZRLN	70.9187207	GMT	15.00000(
VDR	129.374251	RB1	27.3100000	DVDR	-30.5360969	VCAL	309.309961	BANK	-.206938206	OMXB	0.0000E+00	DOMXB	0.0000E+0(
ELR	17.0902595	BETA	4.82263501	MAZB	0.0000E+00	MAXB	0.0000E+00	AZR	-174.913837	RGR	55230.7426		
TC1	15.3000000	H	16365.4452	MACH	0.373211922	Q	110.234518	RANG	1.25338901	VAMI	392.548995	ALFA	0.1452685[
MAYB	21878.3656	GAMA	17.8295369	LATV	40.6568356	LONV	-72.6440528	ELRLH	18.0612516	AZRLN	70.9246813	GMT	15.30000(
VDR	120.193047	RB1	27.3100000	DVDR	-30.6625414	VCAL	306.978311	BANK	-.205665621	OMXB	0.0000E+00	DOMXB	0.0000E+0(
ELR	17.1422603	BETA	4.93887678	MAZB	0.0000E+00	MAXB	0.0000E+00	AZR	-175.030939	RGR	55196.0620		
TC1	15.6000000	H	16400.2497	MACH	0.370908184	Q	108.723863	RANG	1.27281394	VAMI	390.073381	ALFA	0.1280048E
MAYB	20893.2459	GAMA	16.5298704	LATV	40.6569412	LONV	-72.6436505	ELRLH	16.7421464	AZRLN	70.9306108	GMT	15.60000(
VDR	110.981796	RB1	27.3100000	DVDR	-30.7382657	VCAL	304.842569	BANK	-.204511194	OMXB	0.0000E+00	DOMXB	0.0000E+0(
ELR	17.1915307	BETA	5.04792464	MAZB	0.0000E+00	MAXB	0.0000E+00	AZR	-175.148329	RGR	55160.7890		
TC1	15.9000000	H	16432.2880	MACH	0.368817232	Q	107.361508	RANG	1.29225205	VAMI	387.826314	ALFA	0.1239580[
MAYB	20826.3135	GAMA	15.2107491	LATV	40.6570469	LONV	-72.6432479	ELRLH	15.4161670	AZRLN	70.9365133	GMT	15.90000(
VDR	101.754074	RB1	27.3100000	DVDR	-30.7740913	VCAL	302.904140	BANK	-.203473606	OMXB	0.0000E+00	DOMXB	0.0000E+0(

ELR	17.2380611	BETA	5.14932653	MAZB	0.0000E+00	MAXB	0.0000E+00	AZR	-175.266016	RGR	55124.9125		
TC1	16.2000000	H	16461.5570	MACH	0.366941136	Q	106.145587	RANG	1.31170449	VAMI	385.809824	ALFA	0.1301121(
MAYB	21493.3507	GAMA	13.8752138	LATV	40.6571526	LONV	-72.6428451	ELRLH	14.0833630	AZRLN	70.9423939	GMT	16.20000(
VDR	92.5203158	RB1	27.3100000	DVDR	-30.7801426	VCAL	301.164008	BANK	-.202551445	OMXB	0.0000E+00	DOMXB	0.0000E+(
ELR	17.2818450	BETA	5.24266760	MAZB	0.0000E+00	MAXB	0.0000E+00	AZR	-175.384006	RGR	55088.4233		
TC1	16.5000000	H	16488.0560	MACH	0.365281450	Q	105.074215	RANG	1.33117224	VAMI	384.025405	ALFA	0.1435666(
MAYB	22712.8438	GAMA	12.5259374	LATV	40.6572584	LONV	-72.6424419	ELRLH	12.7435386	AZRLN	70.9482588	GMT	16.50000(
VDR	83.2880267	RB1	27.3100000	DVDR	-30.7657924	VCAL	299.622781	BANK	-.201743398	OMXB	0.0000E+00	DOMXB	0.0000E+(
ELR	17.3228782	BETA	5.32757192	MAZB	0.0000E+00	MAXB	0.0000E+00	AZR	-175.502306	RGR	55051.3140		
TC1	16.8000000	H	16511.7863	MACH	0.363839263	Q	104.145537	RANG	1.35065616	VAMI	382.474077	ALFA	0.1615732(
MAYB	24307.8706	GAMA	11.1652474	LATV	40.6573642	LONV	-72.6420383	ELRLH	11.3963123	AZRLN	70.9541145	GMT	16.80000(
VDR	74.0620203	RB1	27.3100000	DVDR	-30.7396214	VCAL	298.280736	BANK	-.201048391	OMXB	0.0000E+00	DOMXB	0.0000E+(
ELR	17.3611579	BETA	5.40370357	MAZB	0.0000E+00	MAXB	0.0000E+00	AZR	-175.620920	RGR	55013.5784		
TC1	17.1000000	H	16532.7500	MACH	0.362615248	Q	103.357765	RANG	1.37015701	VAMI	381.156433	ALFA	0.1815704(
MAYB	26107.7528	GAMA	9.79515093	LATV	40.6574700	LONV	-72.6416344	ELRLH	10.0411747	AZRLN	70.9599680	GMT	17.10000(
VDR	64.8446578	RB1	27.3100000	DVDR	-30.7093898	VCAL	297.137873	BANK	-.200465708	OMXB	0.0000E+00	DOMXB	0.0000E+(
ELR	17.3966825	BETA	5.47076738	MAZB	0.0000E+00	MAXB	0.0000E+00	AZR	-175.739855	RGR	54975.2112		
TC1	17.4000000	H	16550.9500	MACH	0.361609721	Q	102.709220	RANG	1.38967551	VAMI	380.072703	ALFA	0.2012130:
MAYB	27949.5217	GAMA	8.41736103	LATV	40.6575760	LONV	-72.6412301	ELRLH	8.67754465	AZRLN	70.9658266	GMT	17.40000(
VDR	55.6360983	RB1	27.3100000	DVDR	-30.6820183	VCAL	296.193965	BANK	-.199995068	OMXB	0.0000E+00	DOMXB	0.0000E+(
ELR	17.4294500	BETA	5.52850924	MAZB	0.0000E+00	MAXB	0.0000E+00	AZR	-175.859114	RGR	54936.2080		
TC1	17.7000000	H	16566.3886	MACH	0.360822688	Q	102.198364	RANG	1.40921236	VAMI	379.222810	ALFA	0.2183982(
MAYB	29679.2446	GAMA	7.03332518	LATV	40.6576820	LONV	-72.6408254	ELRLH	7.30482240	AZRLN	70.9716975	GMT	17.70000(
VDR	46.4345519	RB1	27.3100000	DVDR	-30.6635760	VCAL	295.448601	BANK	-.199636684	OMXB	0.0000E+00	DOMXB	0.0000E+(
ELR	17.4594584	BETA	5.57671615	MAZB	0.0000E+00	MAXB	0.0000E+00	AZR	-175.978701	RGR	54896.5644		
TC1	18.0000000	H	16579.0675	MACH	0.360253891	Q	101.823831	RANG	1.42876824	VAMI	378.606414	ALFA	0.2312879]
MAYB	31153.2521	GAMA	5.64425462	LATV	40.6577880	LONV	-72.6404203	ELRLH	5.92244052	AZRLN	70.9775880	GMT	18.00000(
VDR	37.2365364	RB1	27.3100000	DVDR	-30.6592746	VCAL	294.901233	BANK	-.199391285	OMXB	0.0000E+00	DOMXB	0.0000E+(
ELR	17.4867044	BETA	5.61521596	MAZB	0.0000E+00	MAXB	0.0000E+00	AZR	-176.098621	RGR	54856.2766		
TC1	18.3000000	H	16588.9869	MACH	0.359902852	Q	101.584449	RANG	1.44834379	VAMI	378.222959	ALFA	0.2383257:
MAYB	32239.3041	GAMA	4.25115494	LATV	40.6578942	LONV	-72.6400148	ELRLH	4.52991106	AZRLN	70.9835051	GMT	18.30000(
VDR	28.0371355	RB1	27.3100000	DVDR	-30.6734655	VCAL	294.551207	BANK	-.199260131	OMXB	0.0000E+00	DOMXB	0.0000E+(
ELR	17.5111833	BETA	5.64387693	MAZB	0.0000E+00	MAXB	0.0000E+00	AZR	-176.218879	RGR	54815.3406		
TC1	18.6000000	H	16596.1457	MACH	0.359768902	Q	101.479260	RANG	1.46793962	VAMI	378.071705	ALFA	0.2382506(
MAYB	32817.7222	GAMA	2.85485729	LATV	40.6580004	LONV	-72.6396088	ELRLH	3.12686910	AZRLN	70.9894556	GMT	18.60000(
VDR	18.8302562	RB1	27.3100000	DVDR	-30.7096400	VCAL	294.397799	BANK	-.199244996	OMXB	0.0000E+00	DOMXB	0.0000E+(
ELR	17.5328884	BETA	5.66260717	MAZB	0.0000E+00	MAXB	0.0000E+00	AZR	-176.339477	RGR	54773.7527		
TC1	18.9000000	H	16600.5406	MACH	0.359851208	Q	101.507528	RANG	1.48755630	VAMI	378.151759	ALFA	0.2301051(
MAYB	32782.5133	GAMA	1.45605014	LATV	40.6581067	LONV	-72.6392024	ELRLH	1.71311233	AZRLN	70.9954458	GMT	18.90000(
VDR	9.60888679	RB1	27.3100000	DVDR	-30.7704327	VCAL	294.440230	BANK	-.199348141	OMXB	0.0000E+00	DOMXB	0.0000E+(
ELR	17.5518111	BETA	5.67135394	MAZB	0.0000E+00	MAXB	0.0000E+00	AZR	-176.460420	RGR	54731.5088		
TC1	19.2000000	H	16602.1660	MACH	0.360148790	Q	101.668752	RANG	1.50719431	VAMI	378.462092	ALFA	0.2132397]
MAYB	32042.4936	GAMA	0.055311233	LATV	40.6582131	LONV	-72.6387955	ELRLH	0.288636118	AZRLN	71.0014818	GMT	19.20000(

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VDR   0.365353296 RB1    27.3100000 DVDR  -30.8576261 VCAL   294.677688 BANK   -.199572267 OMXB   0.0000E+00 D0MXB  0.0000E+(
ELR    17.5679399 BETA   5.67010288 MAZB   0.0000E+00 MAXB   0.0000E+00 AZR    -176.581710 RGR    54688.6050

TC1    19.2118392 H      16602.1732 MACH   0.360164934 Q      101.677837 RANG    1.50796975 VAMI   378.479047 ALFA   0.2123893
MAYB   31997.4715 GAMA   0.3452E-14 LATV    40.6582173 L0NV  -72.6387795 ELRLH  0.232202927 AZRLN  71.0017210 GMT    19.21183
VDR    0.3420E-13 RB1    27.3100000 DVDR  -30.8616248 VCAL   294.691048 BANK   -.199583635 OMXB   0.0000E+00 D0MXB  0.0000E+(
ELR    17.5685189 BETA   5.66984864 MAZB   0.0000E+00 MAXB   0.0000E+00 AZR    -176.586504 RGR    54686.8982


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     EVENT ESN   20                                                  DATE / TIME   15-03-04  13:36:12
     TIME =      19.212          TYPE = PRIMARY-ORDERED          CASE = 1.     CP =  0.125   CYCLES =   194.
           EVENT CAUSED BY
+                                VDR    =  0.00000000E+00                    TG MODEL - G7
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TC1    19.2118392 H      16602.1732 MACH   0.360164934 Q      101.677837 RANG    1.50796975 VAMI   378.479047 ALFA   0.2123893
MAYB   31997.4715 GAMA   0.3452E-14 LATV    40.6582173 L0NV  -72.6387795 ELRLH  0.232202926 AZRLN  71.0017210 GMT    19.21183
VDR    0.3420E-13 RB1    27.3100000 DVDR  -30.8616248 VCAL   294.691048 BANK   -.199583635 OMXB   0.0000E+00 D0MXB  0.0000E+(
ELR    17.5685189 BETA   5.66984864 MAZB   0.0000E+00 MAXB   0.0000E+00 AZR    -176.586504 RGR    54686.8982

TC1    19.5000000 H      16601.0141 MACH   0.360660535 Q      101.962668 RANG    1.52685404 VAMI   379.001551 ALFA   0.1873138
MAYB   30522.6294 GAMA  -1.34686041 LATV    40.6583196 L0NV  -72.6383882 ELRLH -1.14633358 AZRLN  71.0075690 GMT    19.50000(
VDR   -8.90842532 RB1    27.3100000 DVDR  -30.9721517 VCAL   295.109335 BANK   -.199920451 OMXB   0.0000E+00 D0MXB  0.0000E+(
ELR    17.5812608 BETA   5.65887716 MAZB   0.0000E+00 MAXB   0.0000E+00 AZR    -176.703351 RGR    54645.0370

TC1    19.8000000 H      16597.0746 MACH   0.361385201 Q      102.389247 RANG    1.54653574 VAMI   379.768865 ALFA   0.1522838
MAYB   28164.5720 GAMA  -2.75001313 LATV    40.6584261 L0NV  -72.6379804 ELRLH -2.59132238 AZRLN  71.0137121 GMT    19.80000(
VDR   -18.2206864 RB1    27.3100000 DVDR  -31.1141249 VCAL   295.734314 BANK   -.200396074 OMXB   0.0000E+00 D0MXB  0.0000E+(
ELR    17.5917570 BETA   5.63773663 MAZB   0.0000E+00 MAXB   0.0000E+00 AZR    -176.825344 RGR    54600.8008

TC1    20.1000000 H      16590.3348 MACH   0.362321419 Q      102.948693 RANG    1.56623950 VAMI   380.762650 ALFA   0.1083983
MAYB   24928.2870 GAMA  -4.15371225 LATV    40.6585328 L0NV  -72.6375721 ELRLH -4.04558198 AZRLN  71.0199154 GMT    20.10000(
VDR   -27.5795789 RB1    27.3100000 DVDR  -31.2828430 VCAL   296.551748 BANK   -.201002733 OMXB   0.0000E+00 D0MXB  0.0000E+(
ELR    17.5994088 BETA   5.60677682 MAZB   0.0000E+00 MAXB   0.0000E+00 AZR    -176.947690 RGR    54555.8922

TC1    20.4000000 H      16580.7794 MACH   0.363467690 Q      103.641436 RANG    1.58596521 VAMI   381.981401 ALFA   0.0561822(
MAYB   20793.0617 GAMA  -5.55751018 LATV    40.6586395 L0NV  -72.6371634 ELRLH -5.50807713 AZRLN  71.0261824 GMT    20.40000(
VDR   -36.9929220 RB1    27.3100000 DVDR  -31.4768140 VCAL   297.560739 BANK   -.201744140 OMXB   0.0000E+00 D0MXB  0.0000E+(
ELR    17.6041938 BETA   5.56612801 MAZB   0.0000E+00 MAXB   0.0000E+00 AZR    -177.070388 RGR    54510.3071

TC1    20.7000000 H      16568.3910 MACH   0.364822387 Q      104.468131 RANG    1.60571255 VAMI   383.423500 ALFA  -.0035842
MAYB   15757.4554 GAMA  -6.96091833 LATV    40.6587463 L0NV  -72.6367542 ELRLH -6.97747897 AZRLN  71.0325158 GMT    20.70000(
VDR   -46.4679741 RB1    27.3100000 DVDR  -31.6938684 VCAL   298.760369 BANK   -.202624012 OMXB   0.0000E+00 D0MXB  0.0000E+(
ELR    17.6060868 BETA   5.51595405 MAZB   0.0000E+00 MAXB   0.0000E+00 AZR    -177.193437 RGR    54464.0416

TC1    21.0000000 H      16553.1501 MACH   0.366384753 Q      105.430222 RANG    1.62548094 VAMI   385.088256 ALFA  -.0698760
MAYB   9826.84258 GAMA  -8.36339387 LATV    40.6588532 L0NV  -72.6363445 ELRLH -8.45216332 AZRLN  71.0389176 GMT    21.00000(
VDR   -56.0114547 RB1    27.3100000 DVDR  -31.9324546 VCAL   300.150523 BANK   -.203645952 OMXB   0.0000E+00 D0MXB  0.0000E+(
ELR    17.6050598 BETA   5.45643620 MAZB   0.0000E+00 MAXB   0.0000E+00 AZR    -177.316832 RGR    54417.0922

TC1    21.3000000 H      16535.0353 MACH   0.368153828 Q      106.529338 RANG    1.64526961 VAMI   386.974786 ALFA  -.1414712
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MAYB	3059.71360	GAMA	-9.76429508	LATV	40.6589602	LONV	-72.6359345	ELRLH	-9.93021403	AZRLN	71.0453888	GMT	21.30000(
VDR	-65.6291402	RB1	27.3100000	DVDR	-32.1879216	VCAL	301.731007	BANK	-.204813322	OMXB	0.0000E+00	DOMXB	0.0000E+(
ELR	17.6010829	BETA	5.38778876	MAZB	0.0000E+00	MAXB	0.0000E+00	AZR	-177.440570	RGR	54369.4555		
TC1	21.6000000	H	16514.0235	MACH	0.370127718	Q	107.766856	RANG	1.66507751	VAMI	389.081239	ALFA	-.2169924(
MAYB	-4479.49642	GAMA	-11.1628548	LATV	40.6590672	LONV	-72.6355239	ELRLH	-11.4094388	AZRLN	71.0519295	GMT	21.60000(
VDR	-75.3254861	RB1	27.3100000	DVDR	-32.4561192	VCAL	303.500924	BANK	-.206129107	OMXB	0.0000E+00	DOMXB	0.0000E+(
ELR	17.5941239	BETA	5.31026857	MAZB	0.0000E+00	MAXB	0.0000E+00	AZR	-177.564644	RGR	54321.1286		
TC1	21.9000000	H	16490.0907	MACH	0.372304338	Q	109.144324	RANG	1.68490332	VAMI	391.405581	ALFA	-.2949327(
MAYB	-12704.2373	GAMA	-12.5581756	LATV	40.6591743	LONV	-72.6351131	ELRLH	-12.8873907	AZRLN	71.0585391	GMT	21.90000(
VDR	-85.1036245	RB1	27.3100000	DVDR	-32.7323913	VCAL	305.459304	BANK	-.207595787	OMXB	0.0000E+00	DOMXB	0.0000E+(
ELR	17.5841487	BETA	5.22416214	MAZB	0.0000E+00	MAXB	0.0000E+00	AZR	-177.689045	RGR	54272.1094		
TC1	22.2000000	H	16463.2120	MACH	0.374681411	Q	110.663447	RANG	1.70474537	VAMI	393.945593	ALFA	-.3738115(
MAYB	-17259.7815	GAMA	-13.9492194	LATV	40.6592815	LONV	-72.6347018	ELRLH	-14.3615145	AZRLN	71.0652163	GMT	22.20000(
VDR	-94.9652487	RB1	27.3100000	DVDR	-33.0120547	VCAL	307.605088	BANK	-.209215312	OMXB	0.0000E+00	DOMXB	0.0000E+(
ELR	17.5711223	BETA	5.12978428	MAZB	0.0000E+00	MAXB	0.0000E+00	AZR	-177.813763	RGR	54222.3966		
TC1	22.5000000	H	16433.3622	MACH	0.377256452	Q	112.326073	RANG	1.72460172	VAMI	396.698849	ALFA	-.4532396(
MAYB	-17387.5455	GAMA	-15.3348817	LATV	40.6593887	LONV	-72.6342903	ELRLH	-15.8302864	AZRLN	71.0719635	GMT	22.50000(
VDR	-104.911066	RB1	27.3100000	DVDR	-33.2938969	VCAL	309.937115	BANK	-.210990192	OMXB	0.0000E+00	DOMXB	0.0000E+(
ELR	17.5550087	BETA	5.02747651	MAZB	0.0000E+00	MAXB	0.0000E+00	AZR	-177.938786	RGR	54171.9898		
TC1	22.8000000	H	16400.5160	MACH	0.380026753	Q	114.134169	RANG	1.74447014	VAMI	399.662704	ALFA	-.5341219(
MAYB	-13534.3107	GAMA	-16.7141923	LATV	40.6594959	LONV	-72.6338784	ELRLH	-17.2936182	AZRLN	71.0787887	GMT	22.80000(
VDR	-114.942101	RB1	27.3100000	DVDR	-33.5809646	VCAL	312.454109	BANK	-.212924494	OMXB	0.0000E+00	DOMXB	0.0000E+(
ELR	17.5357710	BETA	4.91760482	MAZB	0.0000E+00	MAXB	0.0000E+00	AZR	-178.064099	RGR	54120.8895		
TC1	23.1000000	H	16364.6475	MACH	0.382989382	Q	116.089820	RANG	1.76434803	VAMI	402.834293	ALFA	-.6183537(
MAYB	-5404.07267	GAMA	-18.0864858	LATV	40.6596032	LONV	-72.6334664	ELRLH	-18.7527260	AZRLN	71.0857053	GMT	23.10000(
VDR	-125.060803	RB1	27.3100000	DVDR	-33.8797024	VCAL	315.154677	BANK	-.215024484	OMXB	0.0000E+00	DOMXB	0.0000E+(
ELR	17.5133712	BETA	4.80055637	MAZB	0.0000E+00	MAXB	0.0000E+00	AZR	-178.189686	RGR	54069.0973		
TC1	23.4000000	H	16325.7296	MACH	0.386141190	Q	118.195219	RANG	1.78423242	VAMI	406.210536	ALFA	-.7087638(
MAYB	7550.69631	GAMA	-19.4515552	LATV	40.6597104	LONV	-72.6330542	ELRLH	-20.2102260	AZRLN	71.0927333	GMT	23.40000(
VDR	-135.272056	RB1	27.3100000	DVDR	-34.1998861	VCAL	318.037317	BANK	-.217299588	OMXB	0.0000E+00	DOMXB	0.0000E+(
ELR	17.4877698	BETA	4.67673538	MAZB	0.0000E+00	MAXB	0.0000E+00	AZR	-178.315527	RGR	54016.6155		
TC1	23.7000000	H	16283.7335	MACH	0.389478816	Q	120.452665	RANG	1.80411990	VAMI	409.788148	ALFA	-.8091360(
MAYB	26277.9878	GAMA	-20.8098073	LATV	40.6598176	LONV	-72.6326420	ELRLH	-21.6703120	AZRLN	71.0999003	GMT	23.70000(
VDR	-145.584194	RB1	27.3100000	DVDR	-34.5548118	VCAL	321.100427	BANK	-.219763656	OMXB	0.0000E+00	DOMXB	0.0000E+(
ELR	17.4589246	BETA	4.54655872	MAZB	0.0000E+00	MAXB	0.0000E+00	AZR	-178.441602	RGR	53963.4473		
TC1	24.0000000	H	16238.6269	MACH	0.392998681	Q	122.864559	RANG	1.82400644	VAMI	413.563634	ALFA	-.9240086(
MAYB	37772.0687	GAMA	-22.1624271	LATV	40.6599248	LONV	-72.6322297	ELRLH	-23.1387194	AZRLN	71.1072430	GMT	24.00000(
VDR	-156.010076	RB1	27.3100000	DVDR	-34.9607088	VCAL	324.342305	BANK	-.222436179	OMXB	0.0000E+00	DOMXB	0.0000E+(
ELR	17.4267892	BETA	4.41045120	MAZB	0.0000E+00	MAXB	0.0000E+00	AZR	-178.567882	RGR	53909.5965		
TC1	24.3000000	H	16190.3734	MACH	0.396697023	Q	125.433414	RANG	1.84388726	VAMI	417.533321	ALFA	-1.055330(
MAYB	44479.3528	GAMA	-23.5112925	LATV	40.6600319	LONV	-72.6318175	ELRLH	-24.6192939	AZRLN	71.1147930	GMT	24.30000(
VDR	-166.566487	RB1	27.3100000	DVDR	-35.4252387	VCAL	327.761184	BANK	-.225337602	OMXB	0.0000E+00	DOMXB	0.0000E+(
ELR	17.3913120	BETA	4.26884050	MAZB	0.0000E+00	MAXB	0.0000E+00	AZR	-178.694338	RGR	53855.0675		

TC1	24.6000000	H	16138.9311	MACH	0.400569967	Q	128.161900	RANG	1.86375668	VAMI	421.693443	ALFA	-1.203147(
MAYB	52076.8252	GAMA	-24.8585351	LATV	40.6601389	LONV	-72.6314056	ELRLH	-26.1142381	AZRLN	71.1225779	GMT	24.60000(
VDR	-177.271185	RB1	27.3100000	DVDR	-35.9494772	VCAL	331.355298	BANK	-.228488994	OMXB	0.0000E+00	DOMXB	0.0000E+(
ELR	17.3524351	BETA	4.12215361	MAZB	0.0000E+00	MAXB	0.0000E+00	AZR	-178.820932	RGR	53799.8652		
TC1	24.9000000	H	16084.2527	MACH	0.404613492	Q	131.052814	RANG	1.88360799	VAMI	426.040101	ALFA	-1.367594(
MAYB	60586.4761	GAMA	-26.2064528	LATV	40.6602458	LONV	-72.6309940	ELRLH	-27.6260120	AZRLN	71.1306295	GMT	24.90000(
VDR	-188.142249	RB1	27.3100000	DVDR	-36.5345426	VCAL	335.122856	BANK	-.231915331	OMXB	0.0000E+00	DOMXB	0.0000E+(
ELR	17.3100938	BETA	3.97081609	MAZB	0.0000E+00	MAXB	0.0000E+00	AZR	-178.947621	RGR	53743.9956		
TC1	25.2000000	H	16026.2854	MACH	0.408823357	Q	134.109025	RANG	1.90343329	VAMI	430.569185	ALFA	-1.548914(
MAYB	70036.4920	GAMA	-27.5575292	LATV	40.6603525	LONV	-72.6305829	ELRLH	-29.1573737	AZRLN	71.1389848	GMT	25.20000(
VDR	-199.198099	RB1	27.3100000	DVDR	-37.1815684	VCAL	339.061974	BANK	-.235646358	OMXB	0.0000E+00	DOMXB	0.0000E+(
ELR	17.2642169	BETA	3.81525212	MAZB	0.0000E+00	MAXB	0.0000E+00	AZR	-179.074352	RGR	53687.4656		
TC1	25.5000000	H	15964.9712	MACH	0.413159250	Q	137.309631	RANG	1.92322338	VAMI	435.238608	ALFA	-1.743272(
MAYB	80233.2021	GAMA	-28.9169964	LATV	40.6604590	LONV	-72.6301726	ELRLH	-30.7113849	AZRLN	71.1476869	GMT	25.50000(
VDR	-210.456174	RB1	27.3100000	DVDR	-37.8760033	VCAL	343.140356	BANK	-.239717581	OMXB	0.0000E+00	DOMXB	0.0000E+(
ELR	17.2147262	BETA	3.70734985	MAZB	0.0000E+00	MAXB	0.0000E+00	AZR	-179.201066	RGR	53630.2834		
TC1	25.8000000	H	15900.2474	MACH	0.417610779	Q	140.652790	RANG	1.94296772	VAMI	440.037794	ALFA	-1.951424(
MAYB	91220.8891	GAMA	-30.2875894	LATV	40.6605651	LONV	-72.6297632	ELRLH	-32.2913623	AZRLN	71.1567860	GMT	25.80000(
VDR	-221.928923	RB1	27.3100000	DVDR	-38.6189324	VCAL	347.350930	BANK	-.244171372	OMXB	0.0000E+00	DOMXB	0.0000E+(
ELR	17.1615377	BETA	3.63735508	MAZB	0.0000E+00	MAXB	0.0000E+00	AZR	-179.327692	RGR	53572.4591		
TC1	26.1000000	H	15832.0469	MACH	0.422195076	Q	144.155349	RANG	1.96265421	VAMI	444.985184	ALFA	-2.176702(
MAYB	103219.967	GAMA	-31.6707389	LATV	40.6606709	LONV	-72.6293549	ELRLH	-33.9008765	AZRLN	71.1663409	GMT	26.10000(
VDR	-233.633718	RB1	27.3100000	DVDR	-39.4233560	VCAL	351.710017	BANK	-.249058460	OMXB	0.0000E+00	DOMXB	0.0000E+(
ELR	17.1045616	BETA	3.56620047	MAZB	0.0000E+00	MAXB	0.0000E+00	AZR	-179.454152	RGR	53514.0048		
TC1	26.4000000	H	15760.2975	MACH	0.426904815	Q	147.818153	RANG	1.98226897	VAMI	450.073478	ALFA	-2.419418(
MAYB	116234.951	GAMA	-33.0700158	LATV	40.6607763	LONV	-72.6289481	ELRLH	-35.5438220	AZRLN	71.1764211	GMT	26.40000(
VDR	-245.588664	RB1	27.3100000	DVDR	-40.2856837	VCAL	356.213361	BANK	-.254440055	OMXB	0.0000E+00	DOMXB	0.0000E+(
ELR	17.0437007	BETA	3.49403027	MAZB	0.0000E+00	MAXB	0.0000E+00	AZR	-179.580353	RGR	53454.9348		
TC1	26.7000000	H	15684.9212	MACH	0.431731793	Q	151.641464	RANG	2.00179606	VAMI	455.294471	ALFA	-2.680056(
MAYB	130287.639	GAMA	-34.4891484	LATV	40.6608812	LONV	-72.6285432	ELRLH	-37.2244266	AZRLN	71.1871097	GMT	26.70000(
VDR	-257.810559	RB1	27.3100000	DVDR	-41.2024635	VCAL	360.856022	BANK	-.260390422	OMXB	0.0000E+00	DOMXB	0.0000E+(
ELR	16.9788508	BETA	3.42098517	MAZB	0.0000E+00	MAXB	0.0000E+00	AZR	-179.706191	RGR	53395.2662		
TC1	27.0000000	H	15605.8357	MACH	0.436666928	Q	155.624906	RANG	2.02121726	VAMI	460.639042	ALFA	-2.959184(
MAYB	145409.117	GAMA	-35.9321228	LATV	40.6609854	LONV	-72.6281404	ELRLH	-38.9472562	AZRLN	71.1985066	GMT	27.00000(
VDR	-270.315156	RB1	27.3100000	DVDR	-42.1695587	VCAL	365.632363	BANK	-.267000240	OMXB	0.0000E+00	DOMXB	0.0000E+(
ELR	16.9099010	BETA	3.34720152	MAZB	0.0000E+00	MAXB	0.0000E+00	AZR	-179.831544	RGR	53335.0193		
TC1	27.3000000	H	15522.9536	MACH	0.441700074	Q	159.767266	RANG	2.04051180	VAMI	466.096959	ALFA	-3.257439(
MAYB	161629.624	GAMA	-37.4031987	LATV	40.6610890	LONV	-72.6277402	ELRLH	-40.7172250	AZRLN	71.2107328	GMT	27.30000(
VDR	-283.116703	RB1	27.3100000	DVDR	-43.1809611	VCAL	370.535880	BANK	-.274381059	OMXB	0.0000E+00	DOMXB	0.0000E+(
ELR	16.8367336	BETA	3.27281188	MAZB	0.0000E+00	MAXB	0.0000E+00	AZR	-179.956274	RGR	53274.2185		
TC1	27.6000000	H	15436.1840	MACH	0.446819805	Q	164.066262	RANG	2.05965607	VAMI	471.656652	ALFA	-3.575530(
MAYB	178977.179	GAMA	-38.9069225	LATV	40.6611916	LONV	-72.6273430	ELRLH	-42.5396051	AZRLN	71.2239366	GMT	27.60000(
VDR	-296.227300	RB1	27.3100000	DVDR	-44.2282879	VCAL	375.559001	BANK	-.282671298	OMXB	0.0000E+00	DOMXB	0.0000E+(
ELR	16.7592244	BETA	3.19794590	MAZB	0.0000E+00	MAXB	0.0000E+00	AZR	179.919776	RGR	53212.8926		

TC1	27.9000000	H	15345.4324	MACH	0.452013160	Q	168.518259	RANG	2.07862326	VAMI	477.304930	ALFA	-3.914237
MAYB	197475.992	GAMA	-40.4481379	LATV	40.6612933	LONV	-72.6269496	ELRLH	-44.4200356	AZRLN	71.2383017	GMT	27.90000
VDR	-309.656102	RB1	27.3100000	DVDR	-45.3001868	VCAL	380.692837	BANK	-.292044433	OMXB	0.0000E+00	DOMXB	0.0000E+
ELR	16.6772441	BETA	3.12273115	MAZB	0.0000E+00	MAXB	0.0000E+00	AZR	179.796785	RGR	53151.0756		
TC1	28.2000000	H	15250.6019	MACH	0.457272767	Q	173.123548	RANG	2.09738313	VAMI	483.034509	ALFA	-4.273315
MAYB	198004.243	GAMA	-42.0321445	LATV	40.6613938	LONV	-72.6265604	ELRLH	-46.3635904	AZRLN	71.2540518	GMT	28.20000
VDR	-323.414512	RB1	27.3100000	DVDR	-46.4359160	VCAL	385.933304	BANK	-.302715166	OMXB	0.0000E+00	DOMXB	0.0000E+
ELR	16.5906578	BETA	3.04724448	MAZB	0.0000E+00	MAXB	0.0000E+00	AZR	179.674953	RGR	53088.8078		
TC1	28.5000000	H	15151.5906	MACH	0.462601229	Q	177.890042	RANG	2.11590210	VAMI	488.848659	ALFA	-4.648409
MAYB	194265.971	GAMA	-43.6642741	LATV	40.6614929	LONV	-72.6261762	ELRLH	-48.3712603	AZRLN	71.2714338	GMT	28.50000
VDR	-337.516504	RB1	27.3100000	DVDR	-47.5713157	VCAL	391.284981	BANK	-.314930705	OMXB	0.0000E+00	DOMXB	0.0000E+
ELR	16.4993238	BETA	2.97149036	MAZB	0.0000E+00	MAXB	0.0000E+00	AZR	179.554507	RGR	53026.1343		
TC1	28.8000000	H	15048.2964	MACH	0.467984582	Q	182.813108	RANG	2.13414291	VAMI	494.733152	ALFA	-5.034181
MAYB	185760.457	GAMA	-45.3486329	LATV	40.6615905	LONV	-72.6257977	ELRLH	-50.4418331	AZRLN	71.2907410	GMT	28.80000
VDR	-351.951315	RB1	27.3100000	DVDR	-48.6474704	VCAL	396.738187	BANK	-.328988762	OMXB	0.0000E+00	DOMXB	0.0000E+
ELR	16.4030975	BETA	2.89557927	MAZB	0.0000E+00	MAXB	0.0000E+00	AZR	179.435696	RGR	52963.1074		
TC1	29.1000000	H	14940.6227	MACH	0.473389847	Q	187.872565	RANG	2.15206445	VAMI	500.653633	ALFA	-5.422685
MAYB	171600.866	GAMA	-47.0904954	LATV	40.6616862	LONV	-72.6254258	ELRLH	-52.5725520	AZRLN	71.3123332	GMT	29.10000
VDR	-366.693724	RB1	27.3100000	DVDR	-49.6103135	VCAL	402.266619	BANK	-.345256102	OMXB	0.0000E+00	DOMXB	0.0000E+
ELR	16.3018377	BETA	2.81738580	MAZB	0.0000E+00	MAXB	0.0000E+00	AZR	179.318795	RGR	52899.7880		
TC1	29.4000000	H	14828.4827	MACH	0.478806046	Q	193.064485	RANG	2.16962205	VAMI	506.598957	ALFA	-5.808209
MAYB	151125.407	GAMA	-48.8909656	LATV	40.6617800	LONV	-72.6250614	ELRLH	-54.7588315	AZRLN	71.3366546	GMT	29.40000
VDR	-381.701913	RB1	27.3100000	DVDR	-50.4155744	VCAL	407.862807	BANK	-.364187179	OMXB	0.0000E+00	DOMXB	0.0000E+
ELR	16.1954117	BETA	2.73735169	MAZB	0.0000E+00	MAXB	0.0000E+00	AZR	179.204106	RGR	52836.2469		
TC1	29.7000000	H	14711.8041	MACH	0.484232864	Q	198.393203	RANG	2.18676783	VAMI	512.569229	ALFA	-6.185250
MAYB	123799.287	GAMA	-50.7488078	LATV	40.6618715	LONV	-72.6247056	ELRLH	-56.9940300	AZRLN	71.3642585	GMT	29.70000
VDR	-396.923093	RB1	27.3100000	DVDR	-51.0222208	VCAL	413.528426	BANK	-.386349077	OMXB	0.0000E+00	DOMXB	0.0000E+
ELR	16.0837000	BETA	2.65742195	MAZB	0.0000E+00	MAXB	0.0000E+00	AZR	179.091950	RGR	52772.5646		
TC1	30.0000000	H	14590.5323	MACH	0.489656098	Q	203.851516	RANG	2.20345112	VAMI	518.549812	ALFA	-6.545771
MAYB	89174.6294	GAMA	-52.6631730	LATV	40.6619604	LONV	-72.6243593	ELRLH	-59.2692768	AZRLN	71.3958411	GMT	30.00000
VDR	-412.290563	RB1	27.3100000	DVDR	-51.3833957	VCAL	419.252861	BANK	-.412455044	OMXB	0.0000E+00	DOMXB	0.0000E+
ELR	15.9666007	BETA	2.57768841	MAZB	0.0000E+00	MAXB	0.0000E+00	AZR	178.982670	RGR	52708.8320		
TC1	30.3000000	H	14464.6347	MACH	0.495063659	Q	209.433244	RANG	2.21961917	VAMI	524.528246	ALFA	-6.881120
MAYB	47028.3288	GAMA	-54.6314489	LATV	40.6620465	LONV	-72.6240236	ELRLH	-61.5733242	AZRLN	71.4322858	GMT	30.30000
VDR	-427.724268	RB1	27.3100000	DVDR	-51.4574751	VCAL	425.027060	BANK	-.443409424	OMXB	0.0000E+00	DOMXB	0.0000E+
ELR	15.8440345	BETA	2.49823073	MAZB	0.0000E+00	MAXB	0.0000E+00	AZR	178.876624	RGR	52645.1499		
TC1	30.6000000	H	14334.1046	MACH	0.500446648	Q	215.134207	RANG	2.23521823	VAMI	530.495374	ALFA	-7.182140
MAYB	-2581.67682	GAMA	-56.6490743	LATV	40.6621294	LONV	-72.6236997	ELRLH	-63.8924721	AZRLN	71.4747243	GMT	30.60000
VDR	-443.132891	RB1	27.3100000	DVDR	-51.2116462	VCAL	430.844451	BANK	-.480368589	OMXB	0.0000E+00	DOMXB	0.0000E+
ELR	15.7159496	BETA	2.41911498	MAZB	0.0000E+00	MAXB	0.0000E+00	AZR	178.774176	RGR	52581.6280		
TC1	30.9000000	H	14198.9638	MACH	0.505800429	Q	220.953309	RANG	2.25019471	VAMI	536.446478	ALFA	-7.439345
MAYB	-59262.0671	GAMA	-58.7093811	LATV	40.6622089	LONV	-72.6233887	ELRLH	-66.2105811	AZRLN	71.5246196	GMT	30.90000
VDR	-458.417055	RB1	27.3100000	DVDR	-50.6255449	VCAL	436.701888	BANK	-.524824033	OMXB	0.0000E+00	DOMXB	0.0000E+

ELR	15.5823256	BETA	2.34039280	MAZB	0.0000E+00	MAXB	0.0000E+00	AZR	178.675692	RGR	52518.3835		
TC1	31.2000000	H	14059.2649	MACH	0.511125595	Q	226.893630	RANG	2.26449665	VAMI	542.382313	ALFA	-7.643153
MAYB	-122236.702	GAMA	-60.8034775	LATV	40.6622848	LONV	-72.6230917	ELRLH	-68.5091964	AZRLN	71.5838802	GMT	31.20000
VDR	-473.473554	RB1	27.3100000	DVDR	-49.6945027	VCAL	442.600539	BANK	-.578716097	OMXB	0.0000E+00	DOMXB	0.0000E+
ELR	15.4431766	BETA	2.26210162	MAZB	0.0000E+00	MAXB	0.0000E+00	AZR	178.581526	RGR	52455.5391		
TC1	31.5000000	H	13915.0916	MACH	0.516292734	Q	232.840754	RANG	2.27807555	VAMI	548.165531	ALFA	-7.756843
MAYB	-189524.510	GAMA	-62.9480532	LATV	40.6623566	LONV	-72.6228096	ELRLH	-70.7678038	AZRLN	71.6550160	GMT	31.50000
VDR	-488.193235	RB1	27.3100000	DVDR	-48.3532002	VCAL	448.425568	BANK	-.644589861	OMXB	0.0000E+00	DOMXB	0.0000E+
ELR	15.2985536	BETA	2.17553674	MAZB	0.0000E+00	MAXB	0.0000E+00	AZR	178.492013	RGR	52393.2196		
TC1	31.8000000	H	13766.5635	MACH	0.521388123	Q	238.870132	RANG	2.29089062	VAMI	553.887519	ALFA	-7.787818
MAYB	-259267.847	GAMA	-65.1137425	LATV	40.6624243	LONV	-72.6225432	ELRLH	-72.9644331	AZRLN	71.7413602	GMT	31.80000
VDR	-502.456279	RB1	27.3100000	DVDR	-46.6950899	VCAL	454.252867	BANK	-.725816075	OMXB	0.0000E+00	DOMXB	0.0000E+
ELR	15.1485510	BETA	2.08217560	MAZB	0.0000E+00	MAXB	0.0000E+00	AZR	178.407435	RGR	52331.5458		
TC1	32.1000000	H	13613.8292	MACH	0.526532220	Q	245.093600	RANG	2.30290956	VAMI	559.676123	ALFA	-7.748817
MAYB	-330023.209	GAMA	-67.2646978	LATV	40.6624876	LONV	-72.6222934	ELRLH	-75.0762833	AZRLN	71.8473731	GMT	32.10000
VDR	-516.189368	RB1	27.3100000	DVDR	-44.8282642	VCAL	460.189635	BANK	-.826893589	OMXB	0.0000E+00	DOMXB	0.0000E+
ELR	14.9933006	BETA	1.98800739	MAZB	0.0000E+00	MAXB	0.0000E+00	AZR	178.328019	RGR	52270.6314		
TC1	32.4000000	H	13457.0560	MACH	0.531744249	Q	251.534113	RANG	2.31410781	VAMI	565.551762	ALFA	-7.632606
MAYB	-399531.046	GAMA	-69.3850074	LATV	40.6625464	LONV	-72.6220606	ELRLH	-77.0801954	AZRLN	71.9790331	GMT	32.40000
VDR	-529.338033	RB1	27.3100000	DVDR	-42.8092772	VCAL	466.253287	BANK	-.953840159	OMXB	0.0000E+00	DOMXB	0.0000E+
ELR	14.8329604	BETA	1.89313994	MAZB	0.0000E+00	MAXB	0.0000E+00	AZR	178.253941	RGR	52210.5812		
TC1	32.7000000	H	13296.4251	MACH	0.537046379	Q	258.218572	RANG	2.32447010	VAMI	571.538000	ALFA	-7.434147
MAYB	-465186.443	GAMA	-71.4569374	LATV	40.6626006	LONV	-72.6218450	ELRLH	-78.9533744	AZRLN	72.1443266	GMT	32.70000
VDR	-541.866551	RB1	27.3100000	DVDR	-40.7056267	VCAL	472.463969	BANK	-1.11468123	OMXB	0.0000E+00	DOMXB	0.0000E+
ELR	14.6677094	BETA	1.79770020	MAZB	0.0000E+00	MAXB	0.0000E+00	AZR	178.185316	RGR	52151.4876		
TC1	33.0000000	H	13132.1252	MACH	0.542461521	Q	265.176027	RANG	2.33399181	VAMI	577.659226	ALFA	-7.151000
MAYB	-524129.926	GAMA	-73.4613749	LATV	40.6626502	LONV	-72.6216469	ELRLH	-80.6742324	AZRLN	72.3537739	GMT	33.00000
VDR	-553.760338	RB1	27.3100000	DVDR	-38.5896464	VCAL	478.842669	BANK	-1.31997426	OMXB	0.0000E+00	DOMXB	0.0000E+
ELR	14.4977424	BETA	1.70183980	MAZB	0.0000E+00	MAXB	0.0000E+00	AZR	178.122187	RGR	52093.4265		
TC1	33.3000000	H	12964.3463	MACH	0.548042004	Q	272.466411	RANG	2.34267998	VAMI	583.971222	ALFA	-6.794004
MAYB	-574341.079	GAMA	-75.3659962	LATV	40.6626953	LONV	-72.6214660	ELRLH	-82.2233169	AZRLN	72.6207640	GMT	33.30000
VDR	-565.026846	RB1	27.3100000	DVDR	-36.5468438	VCAL	485.437354	BANK	-1.58314217	OMXB	0.0000E+00	DOMXB	0.0000E+
ELR	14.3232627	BETA	1.62859676	MAZB	0.0000E+00	MAXB	0.0000E+00	AZR	178.064519	RGR	52036.4541		
TC1	33.6000000	H	12793.2715	MACH	0.553864434	Q	280.178089	RANG	2.35055233	VAMI	590.555810	ALFA	-6.386760
MAYB	-615321.922	GAMA	-77.1235321	LATV	40.6627360	LONV	-72.6213020	ELRLH	-83.5839231	AZRLN	72.9609715	GMT	33.60000
VDR	-575.704987	RB1	27.3100000	DVDR	-34.6588045	VCAL	492.318858	BANK	-1.91988911	OMXB	0.0000E+00	DOMXB	0.0000E+
ELR	14.1444735	BETA	1.64061634	MAZB	0.0000E+00	MAXB	0.0000E+00	AZR	178.012204	RGR	51980.6067		
TC1	33.9000000	H	12619.0711	MACH	0.559810932	Q	288.205195	RANG	2.35763613	VAMI	597.287547	ALFA	-5.893775
MAYB	-640440.003	GAMA	-78.7625930	LATV	40.6627723	LONV	-72.6211543	ELRLH	-84.7425142	AZRLN	73.3891414	GMT	33.90000
VDR	-585.836432	RB1	27.3100000	DVDR	-32.9102031	VCAL	499.381110	BANK	-2.34498404	OMXB	0.0000E+00	DOMXB	0.0000E+
ELR	13.9615695	BETA	1.65215005	MAZB	0.0000E+00	MAXB	0.0000E+00	AZR	177.965073	RGR	51925.9011		
TC1	34.2000000	H	12441.9024	MACH	0.565889249	Q	296.565615	RANG	2.36397211	VAMI	604.174815	ALFA	-5.327420
MAYB	-647118.191	GAMA	-80.2617760	LATV	40.6628045	LONV	-72.6210221	ELRLH	-85.6905354	AZRLN	73.9109035	GMT	34.20000

VDR	-595.469166	RB1	27.3100000	DVDR	-31.3381368	VCAL	506.631976	BANK	-2.86407257	OMXB	0.0000E+00	D0MXB	0.0000E+(
ELR	13.7747390	BETA	1.66312801	MAZB	0.0000E+00	MAXB	0.0000E+00	AZR	177.922863	RGR	51872.3283		
TC1	34.5000000	H	12261.9073	MACH	0.572093905	Q	305.264149	RANG	2.36961429	VAMI	611.211910	ALFA	-4.703424
MAYB	-633507.680	GAMA	-81.6023242	LATV	40.6628330	L0NV	-72.6209042	ELRLH	-86.4254613	AZRLN	74.5066707	GMT	34.50000
VDR	-604.658654	RB1	27.3100000	DVDR	-29.9552915	VCAL	514.067339	BANK	-3.45757225	OMXB	0.0000E+00	D0MXB	0.0000E+(
ELR	13.5841600	BETA	1.67352487	MAZB	0.0000E+00	MAXB	0.0000E+00	AZR	177.885225	RGR	51819.8531		
TC1	34.8000000	H	12079.2106	MACH	0.578405635	Q	314.290692	RANG	2.37462862	VAMI	618.378410	ALFA	-4.040603
MAYB	-588823.605	GAMA	-82.7692456	LATV	40.6628580	L0NV	-72.6207994	ELRLH	-86.9515488	AZRLN	75.1113156	GMT	34.80000
VDR	-613.460622	RB1	27.3100000	DVDR	-28.7512650	VCAL	521.670363	BANK	-4.06034797	OMXB	0.0000E+00	D0MXB	0.0000E+(
ELR	13.3899979	BETA	1.68336043	MAZB	0.0000E+00	MAXB	0.0000E+00	AZR	177.851726	RGR	51768.4161		
TC1	35.1000000	H	11893.9173	MACH	0.584950542	Q	323.795065	RANG	2.37909017	VAMI	625.809400	ALFA	-3.463754
MAYB	-530747.992	GAMA	-83.6510074	LATV	40.6628800	L0NV	-72.6207060	ELRLH	-87.2830785	AZRLN	75.6154168	GMT	35.10000
VDR	-621.971161	RB1	27.3100000	DVDR	-28.0412330	VCAL	529.559250	BANK	-4.56295224	OMXB	0.0000E+00	D0MXB	0.0000E+(
ELR	13.1924000	BETA	1.70873647	MAZB	0.0000E+00	MAXB	0.0000E+00	AZR	177.821873	RGR	51717.9382		
TC1	35.4000000	H	11706.0961	MACH	0.591644448	Q	333.701165	RANG	2.38306776	VAMI	633.415297	ALFA	-2.932064
MAYB	-471195.493	GAMA	-84.3132677	LATV	40.6628994	L0NV	-72.6206226	ELRLH	-87.4394925	AZRLN	75.9027627	GMT	35.40000
VDR	-630.297970	RB1	27.3100000	DVDR	-27.4838564	VCAL	537.658108	BANK	-4.84913764	OMXB	0.0000E+00	D0MXB	0.0000E+(
ELR	12.9914711	BETA	1.72681530	MAZB	0.0000E+00	MAXB	0.0000E+00	AZR	177.795216	RGR	51668.3429		
TC1	35.7000000	H	11515.7982	MACH	0.598364118	Q	343.881775	RANG	2.38662701	VAMI	641.064466	ALFA	-2.384474
MAYB	-399510.319	GAMA	-84.8415761	LATV	40.6629165	L0NV	-72.6205479	ELRLH	-87.4402640	AZRLN	75.9120946	GMT	35.70000
VDR	-638.468093	RB1	27.3100000	DVDR	-26.9905155	VCAL	545.853393	BANK	-4.85760929	OMXB	0.0000E+00	D0MXB	0.0000E+(
ELR	12.7872943	BETA	1.72108094	MAZB	0.0000E+00	MAXB	0.0000E+00	AZR	177.771320	RGR	51619.5556		
TC1	36.0000000	H	11323.0685	MACH	0.605088451	Q	354.319082	RANG	2.38983994	VAMI	648.734412	ALFA	-1.845419
MAYB	-319315.156	GAMA	-85.2381410	LATV	40.6629316	L0NV	-72.6204803	ELRLH	-87.3084806	AZRLN	75.6811529	GMT	36.00000
VDR	-646.495203	RB1	27.3100000	DVDR	-26.5260804	VCAL	554.125858	BANK	-4.62606390	OMXB	0.0000E+00	D0MXB	0.0000E+(
ELR	12.5799480	BETA	1.69269757	MAZB	0.0000E+00	MAXB	0.0000E+00	AZR	177.749711	RGR	51571.4899		
TC1	36.3000000	H	11127.9497	MACH	0.611791915	Q	364.988293	RANG	2.39278178	VAMI	656.397822	ALFA	-1.335739
MAYB	-234568.963	GAMA	-85.5105568	LATV	40.6629453	L0NV	-72.6204183	ELRLH	-87.0699940	AZRLN	75.3106970	GMT	36.30000
VDR	-654.383845	RB1	27.3100000	DVDR	-26.0613538	VCAL	562.451753	BANK	-4.25521180	OMXB	0.0000E+00	D0MXB	0.0000E+(
ELR	12.3695078	BETA	1.64312765	MAZB	0.0000E+00	MAXB	0.0000E+00	AZR	177.729892	RGR	51524.0536		
TC1	36.6000000	H	10930.4843	MACH	0.618429711	Q	375.839004	RANG	2.39552766	VAMI	664.006611	ALFA	-.8411444
MAYB	-142278.776	GAMA	-85.6895890	LATV	40.6629579	L0NV	-72.6203604	ELRLH	-86.7522857	AZRLN	74.8999142	GMT	36.60000
VDR	-662.128464	RB1	27.3100000	DVDR	-25.5530327	VCAL	570.788642	BANK	-3.84418745	OMXB	0.0000E+00	D0MXB	0.0000E+(
ELR	12.1560480	BETA	1.60523987	MAZB	0.0000E+00	MAXB	0.0000E+00	AZR	177.711365	RGR	51477.1549		
TC1	36.9000000	H	10730.7187	MACH	0.624975653	Q	386.839784	RANG	2.39815480	VAMI	671.532535	ALFA	-.3764561
MAYB	-45706.2990	GAMA	-85.7776927	LATV	40.6629698	L0NV	-72.6203049	ELRLH	-86.3851950	AZRLN	74.5145713	GMT	36.90000
VDR	-669.709920	RB1	27.3100000	DVDR	-24.9861978	VCAL	579.111055	BANK	-3.45870026	OMXB	0.0000E+00	D0MXB	0.0000E+(
ELR	11.9396463	BETA	1.61612780	MAZB	0.0000E+00	MAXB	0.0000E+00	AZR	177.693619	RGR	51430.6995		
TC1	37.2000000	H	10528.7041	MACH	0.631439726	Q	398.002299	RANG	2.40073900	VAMI	678.986139	ALFA	-.0181445
MAYB	36579.9539	GAMA	-85.7497741	LATV	40.6629815	L0NV	-72.6202503	ELRLH	-86.0001116	AZRLN	74.1862928	GMT	37.20000
VDR	-677.118854	RB1	27.3100000	DVDR	-24.4062589	VCAL	587.427608	BANK	-3.13031441	OMXB	0.0000E+00	D0MXB	0.0000E+(
ELR	11.7203837	BETA	1.62272558	MAZB	0.0000E+00	MAXB	0.0000E+00	AZR	177.676152	RGR	51384.5962		
TC1	37.5000000	H	10324.4917	MACH	0.637815177	Q	409.317556	RANG	2.40334233	VAMI	686.359980	ALFA	0.2364256

MAYB	101668.931	GAMA	-85.6341564	LATV	40.6629932	LONV	-72.6201953	ELRLH	-85.6243739	AZRLN	73.9219310	GMT	37.50000(
VDR	-684.368377	RB1	27.3100000	DVDR	-23.9281907	VCAL	595.730968	BANK	-2.86582911	OMXB	0.0000E+00	DOMXB	0.0000E+(
ELR	11.4983342	BETA	1.62496805	MAZB	0.0000E+00	MAXB	0.0000E+00	AZR	177.658551	RGR	51338.7769		
TC1	37.8000000	H	10118.1261	MACH	0.644102496	Q	420.785416	RANG	2.40601136	VAMI	693.654400	ALFA	0.39491731
MAYB	148236.490	GAMA	-85.4580376	LATV	40.6630053	LONV	-72.6201390	ELRLH	-85.2798086	AZRLN	73.7169744	GMT	37.80000(
VDR	-691.476051	RB1	27.3100000	DVDR	-23.4586835	VCAL	604.020700	BANK	-2.66069055	OMXB	0.0000E+00	DOMXB	0.0000E+(
ELR	11.2735576	BETA	1.62278461	MAZB	0.0000E+00	MAXB	0.0000E+00	AZR	177.640509	RGR	51293.1984		
TC1	38.1000000	H	9909.64971	MACH	0.650243356	Q	432.327527	RANG	2.40877742	VAMI	700.806349	ALFA	0.51722718
MAYB	189216.525	GAMA	-85.2944002	LATV	40.6630178	LONV	-72.6200806	ELRLH	-84.9823048	AZRLN	73.5633259	GMT	38.10000(
VDR	-698.444193	RB1	27.3100000	DVDR	-22.9855783	VCAL	612.239476	BANK	-2.50677043	OMXB	0.0000E+00	DOMXB	0.0000E+(
ELR	11.0461047	BETA	1.61115336	MAZB	0.0000E+00	MAXB	0.0000E+00	AZR	177.621815	RGR	51247.8427		
TC1	38.4000000	H	9699.10525	MACH	0.656218304	Q	443.912601	RANG	2.41166620	VAMI	707.794501	ALFA	0.60630236
MAYB	224109.934	GAMA	-85.1583241	LATV	40.6630311	LONV	-72.6200196	ELRLH	-84.7452819	AZRLN	73.4542794	GMT	38.40000(
VDR	-705.268899	RB1	27.3100000	DVDR	-22.5219457	VCAL	620.366791	BANK	-2.39733613	OMXB	0.0000E+00	DOMXB	0.0000E+(
ELR	10.8160241	BETA	1.59170846	MAZB	0.0000E+00	MAXB	0.0000E+00	AZR	177.602301	RGR	51202.7013		
TC1	38.7000000	H	9486.53425	MACH	0.662081627	Q	455.608900	RANG	2.41469749	VAMI	714.677055	ALFA	0.60666185
MAYB	235009.312	GAMA	-85.0055766	LATV	40.6630450	LONV	-72.6199557	ELRLH	-84.5803799	AZRLN	73.3853359	GMT	38.70000(
VDR	-711.963553	RB1	27.3100000	DVDR	-22.1198086	VCAL	628.453708	BANK	-2.32786547	OMXB	0.0000E+00	DOMXB	0.0000E+(
ELR	10.5833610	BETA	1.57228682	MAZB	0.0000E+00	MAXB	0.0000E+00	AZR	177.581833	RGR	51157.7752		
TC1	39.0000000	H	9271.97293	MACH	0.667827400	Q	467.405441	RANG	2.41787483	VAMI	721.447352	ALFA	0.53953743
MAYB	224925.512	GAMA	-84.8606989	LATV	40.6630598	LONV	-72.6198888	ELRLH	-84.4918871	AZRLN	73.3519571	GMT	39.00000(
VDR	-718.547030	RB1	27.3100000	DVDR	-21.7796562	VCAL	636.493220	BANK	-2.29381119	OMXB	0.0000E+00	DOMXB	0.0000E+(
ELR	10.3481487	BETA	1.55288018	MAZB	0.0000E+00	MAXB	0.0000E+00	AZR	177.560387	RGR	51113.0918		
TC1	39.3000000	H	9055.45192	MACH	0.673450582	Q	479.291931	RANG	2.42118782	VAMI	728.099674	ALFA	0.42674745
MAYB	198099.063	GAMA	-84.7423843	LATV	40.6630752	LONV	-72.6198190	ELRLH	-84.4771432	AZRLN	73.3499122	GMT	39.30000(
VDR	-725.036381	RB1	27.3100000	DVDR	-21.4894730	VCAL	644.479128	BANK	-2.29094720	OMXB	0.0000E+00	DOMXB	0.0000E+(
ELR	10.1104102	BETA	1.53347858	MAZB	0.0000E+00	MAXB	0.0000E+00	AZR	177.538033	RGR	51068.7011		
TC1	39.6000000	H	8836.99760	MACH	0.678926647	Q	491.229371	RANG	2.42461650	VAMI	734.607203	ALFA	0.32467559
MAYB	171864.256	GAMA	-84.6780756	LATV	40.6630913	LONV	-72.6197468	ELRLH	-84.5281771	AZRLN	73.3754467	GMT	39.60000(
VDR	-731.440517	RB1	27.3100000	DVDR	-21.2014936	VCAL	652.385965	BANK	-2.31553397	OMXB	0.0000E+00	DOMXB	0.0000E+(
ELR	9.87016135	BETA	1.59309124	MAZB	0.0000E+00	MAXB	0.0000E+00	AZR	177.514903	RGR	51024.6682		
TC1	39.9000000	H	8616.63562	MACH	0.684262498	Q	503.222564	RANG	2.42814058	VAMI	740.977071	ALFA	0.21837312
MAYB	141174.767	GAMA	-84.6579716	LATV	40.6631078	LONV	-72.6196727	ELRLH	-84.6360474	AZRLN	73.4262978	GMT	39.90000(
VDR	-737.758766	RB1	27.3100000	DVDR	-20.9218702	VCAL	660.218994	BANK	-2.36532576	OMXB	0.0000E+00	DOMXB	0.0000E+(
ELR	9.62741823	BETA	1.67559137	MAZB	0.0000E+00	MAXB	0.0000E+00	AZR	177.491130	RGR	50981.0585		
TC1	40.2000000	H	8394.39111	MACH	0.689461979	Q	515.272281	RANG	2.43173872	VAMI	747.213105	ALFA	0.10829425
MAYB	104297.190	GAMA	-84.6795776	LATV	40.6631247	LONV	-72.6195970	ELRLH	-84.7909084	AZRLN	73.5010469	GMT	40.20000(
VDR	-743.993895	RB1	27.3100000	DVDR	-20.6447963	VCAL	667.980530	BANK	-2.43892296	OMXB	0.0000E+00	DOMXB	0.0000E+(
ELR	9.38219725	BETA	1.75298942	MAZB	0.0000E+00	MAXB	0.0000E+00	AZR	177.466856	RGR	50937.9389		
TC1	40.5000000	H	8170.28895	MACH	0.694524153	Q	527.372287	RANG	2.43538771	VAMI	753.313957	ALFA	0.00594801
MAYB	67650.9903	GAMA	-84.7423405	LATV	40.6631419	LONV	-72.6195202	ELRLH	-84.9809282	AZRLN	73.5979837	GMT	40.50000(
VDR	-750.144529	RB1	27.3100000	DVDR	-20.3566947	VCAL	675.668157	BANK	-2.53463806	OMXB	0.0000E+00	DOMXB	0.0000E+(
ELR	9.13451521	BETA	1.82485284	MAZB	0.0000E+00	MAXB	0.0000E+00	AZR	177.442235	RGR	50895.3793		

TC1	40.8000000	H	7944.35441	MACH	0.699467427	Q	539.545964	RANG	2.43906500	VAMI	759.299263	ALFA	-.09682012
MAYB	29198.9003	GAMA	-84.8320570	LATV	40.6631592	LONV	-72.6194429	ELRLH	-85.1941175	AZRLN	73.7152130	GMT	40.80000(
VDR	-756.212675	RB1	27.3100000	DVDR	-20.1095948	VCAL	683.298794	BANK	-2.65059928	OMXB	0.0000E+00	DOMXB	0.0000E+(
ELR	8.88439088	BETA	1.87456077	MAZB	0.0000E+00	MAXB	0.0000E+00	AZR	177.417417	RGR	50853.4481		
TC1	41.1000000	H	7716.60988	MACH	0.704325001	Q	551.841594	RANG	2.44274606	VAMI	765.204799	ALFA	-.21732733
MAYB	-17621.7554	GAMA	-84.9309247	LATV	40.6631765	LONV	-72.6193654	ELRLH	-85.4177750	AZRLN	73.8495904	GMT	41.10000(
VDR	-762.212007	RB1	27.3100000	DVDR	-19.8759054	VCAL	690.904522	BANK	-2.78368712	OMXB	0.0000E+00	DOMXB	0.0000E+(
ELR	8.63184063	BETA	1.87176825	MAZB	0.0000E+00	MAXB	0.0000E+00	AZR	177.392566	RGR	50812.2163		
TC1	41.4000000	H	7487.07678	MACH	0.709061223	Q	564.201037	RANG	2.44640294	VAMI	770.991591	ALFA	-.29727358
MAYB	-49964.2412	GAMA	-85.0640993	LATV	40.6631937	LONV	-72.6192885	ELRLH	-85.6371568	AZRLN	73.9947818	GMT	41.40000(
VDR	-768.132430	RB1	27.3100000	DVDR	-19.5845390	VCAL	698.448451	BANK	-2.92759627	OMXB	0.0000E+00	DOMXB	0.0000E+(
ELR	8.37688020	BETA	1.86820273	MAZB	0.0000E+00	MAXB	0.0000E+00	AZR	177.367866	RGR	50771.7605		
TC1	41.7000000	H	7255.78112	MACH	0.713678010	Q	576.623177	RANG	2.45001535	VAMI	776.661401	ALFA	-.33989506
MAYB	-68231.1685	GAMA	-85.2179178	LATV	40.6632106	LONV	-72.6192124	ELRLH	-85.8412830	AZRLN	74.1439045	GMT	41.70000(
VDR	-773.957826	RB1	27.3100000	DVDR	-19.2442167	VCAL	705.931130	BANK	-3.07546595	OMXB	0.0000E+00	DOMXB	0.0000E+(
ELR	8.11953415	BETA	1.86382172	MAZB	0.0000E+00	MAXB	0.0000E+00	AZR	177.343454	RGR	50732.1444		
TC1	42.0000000	H	7022.75336	MACH	0.718177846	Q	589.107794	RANG	2.45357168	VAMI	782.216598	ALFA	-.35157967
MAYB	-74267.0379	GAMA	-85.3801856	LATV	40.6632272	LONV	-72.6191376	ELRLH	-86.0237712	AZRLN	74.2906728	GMT	42.00000(
VDR	-779.675242	RB1	27.3100000	DVDR	-18.8667018	VCAL	713.353638	BANK	-3.22102311	OMXB	0.0000E+00	DOMXB	0.0000E+(
ELR	7.85983574	BETA	1.85858142	MAZB	0.0000E+00	MAXB	0.0000E+00	AZR	177.319407	RGR	50693.4177		
TC1	42.3000000	H	6788.02752	MACH	0.722560818	Q	601.650713	RANG	2.45706837	VAMI	787.656930	ALFA	-.33048926
MAYB	-66626.6952	GAMA	-85.5419138	LATV	40.6632434	LONV	-72.6190639	ELRLH	-86.1824323	AZRLN	74.4303396	GMT	42.30000(
VDR	-785.273845	RB1	27.3100000	DVDR	-18.4535992	VCAL	720.714591	BANK	-3.35952517	OMXB	0.0000E+00	DOMXB	0.0000E+(
ELR	7.59782536	BETA	1.87561641	MAZB	0.0000E+00	MAXB	0.0000E+00	AZR	177.295749	RGR	50655.6163		
TC1	42.6000000	H	6551.64054	MACH	0.726830643	Q	614.253689	RANG	2.46050966	VAMI	792.986090	ALFA	-.29734639
MAYB	-53516.6073	GAMA	-85.6926620	LATV	40.6632593	LONV	-72.6189914	ELRLH	-86.3191577	AZRLN	74.5610907	GMT	42.60000(
VDR	-790.746319	RB1	27.3100000	DVDR	-18.0284672	VCAL	728.016262	BANK	-3.48915435	OMXB	0.0000E+00	DOMXB	0.0000E+(
ELR	7.33354951	BETA	1.89352281	MAZB	0.0000E+00	MAXB	0.0000E+00	AZR	177.272452	RGR	50618.7632		
TC1	42.9000000	H	6313.63070	MACH	0.730987697	Q	626.912948	RANG	2.46390381	VAMI	798.204128	ALFA	-.26053496
MAYB	-38335.0287	GAMA	-85.8295760	LATV	40.6632750	LONV	-72.6189198	ELRLH	-86.4380533	AZRLN	74.6836699	GMT	42.90000(
VDR	-796.090603	RB1	27.3100000	DVDR	-17.6000358	VCAL	735.257518	BANK	-3.61064644	OMXB	0.0000E+00	DOMXB	0.0000E+(
ELR	7.06705773	BETA	1.90970998	MAZB	0.0000E+00	MAXB	0.0000E+00	AZR	177.249462	RGR	50582.8741		
TC1	43.2000000	H	6074.03657	MACH	0.735031498	Q	639.623107	RANG	2.46726048	VAMI	803.310150	ALFA	-.22548220
MAYB	-23413.2221	GAMA	-85.9524352	LATV	40.6632904	LONV	-72.6188490	ELRLH	-86.5439907	AZRLN	74.8006094	GMT	43.20000(
VDR	-801.306532	RB1	27.3100000	DVDR	-17.1734529	VCAL	742.436323	BANK	-3.72652413	OMXB	0.0000E+00	DOMXB	0.0000E+(
ELR	6.79840066	BETA	1.92411998	MAZB	0.0000E+00	MAXB	0.0000E+00	AZR	177.226714	RGR	50547.9622		
TC1	43.5000000	H	5832.89652	MACH	0.738953413	Q	652.364194	RANG	2.47058902	VAMI	808.294339	ALFA	-.20428739
MAYB	-14246.0179	GAMA	-86.0725540	LATV	40.6633056	LONV	-72.6187788	ELRLH	-86.6417529	AZRLN	74.9155075	GMT	43.50000(
VDR	-806.396127	RB1	27.3100000	DVDR	-16.7606688	VCAL	749.542185	BANK	-3.84037633	OMXB	0.0000E+00	DOMXB	0.0000E+(
ELR	6.52762902	BETA	1.89571168	MAZB	0.0000E+00	MAXB	0.0000E+00	AZR	177.204146	RGR	50514.0405		
TC1	43.8000000	H	5590.24781	MACH	0.742758218	Q	665.139255	RANG	2.47389563	VAMI	813.161520	ALFA	-.19121634
MAYB	-8490.28759	GAMA	-86.1890487	LATV	40.6633207	LONV	-72.6187091	ELRLH	-86.7346050	AZRLN	75.0312847	GMT	43.80000(
VDR	-811.363443	RB1	27.3100000	DVDR	-16.3553129	VCAL	756.578411	BANK	-3.95511696	OMXB	0.0000E+00	DOMXB	0.0000E+(
ELR	6.25479201	BETA	1.84790446	MAZB	0.0000E+00	MAXB	0.0000E+00	AZR	177.181717	RGR	50481.1267		

TC1	44.1000000	H	5346.12696	MACH	0.746449198	Q	677.948984	RANG	2.47718410	VAMI	817.914903	ALFA	-.1823032
MAYB	-4483.15822	GAMA	-86.2995503	LATV	40.6633357	LONV	-72.6186397	ELRLH	-86.8244873	AZRLN	75.1499782	GMT	44.10000
VDR	-816.209642	RB1	27.3100000	DVDR	-15.9532101	VCAL	763.546820	BANK	-4.07277956	OMXB	0.0000E+00	DOMXB	0.0000E+
ELR	5.97993796	BETA	1.79904460	MAZB	0.0000E+00	MAXB	0.0000E+00	AZR	177.159401	RGR	50449.2418		
TC1	44.4000000	H	5100.57018	MACH	0.750026067	Q	690.787680	RANG	2.48045709	VAMI	822.553787	ALFA	-.1772462
MAYB	-2169.32488	GAMA	-86.4055520	LATV	40.6633506	LONV	-72.6185706	ELRLH	-86.9127569	AZRLN	75.2733512	GMT	44.40000
VDR	-820.935666	RB1	27.3100000	DVDR	-15.5540636	VCAL	770.445536	BANK	-4.19512449	OMXB	0.0000E+00	DOMXB	0.0000E+
ELR	5.70311520	BETA	1.74914201	MAZB	0.0000E+00	MAXB	0.0000E+00	AZR	177.137183	RGR	50418.4084		
TC1	44.7000000	H	4853.61342	MACH	0.753469825	Q	703.614525	RANG	2.48371630	VAMI	827.056925	ALFA	-.1717028
MAYB	446.497924	GAMA	-86.5316436	LATV	40.6633654	LONV	-72.6185018	ELRLH	-87.0002491	AZRLN	75.4028272	GMT	44.70000
VDR	-825.542056	RB1	27.3100000	DVDR	-15.1549630	VCAL	777.253026	BANK	-4.32357359	OMXB	0.0000E+00	DOMXB	0.0000E+
ELR	5.42437219	BETA	1.65031790	MAZB	0.0000E+00	MAXB	0.0000E+00	AZR	177.115049	RGR	50388.6498		
TC1	45.0000000	H	4605.29255	MACH	0.756794319	Q	716.448785	RANG	2.48696324	VAMI	831.439077	ALFA	-.1735108
MAYB	-429.137071	GAMA	-86.6631726	LATV	40.6633802	LONV	-72.6184332	ELRLH	-87.0876861	AZRLN	75.5399637	GMT	45.00000
VDR	-830.029464	RB1	27.3100000	DVDR	-14.7624250	VCAL	783.982069	BANK	-4.45968303	OMXB	0.0000E+00	DOMXB	0.0000E+
ELR	5.14375785	BETA	1.51823508	MAZB	0.0000E+00	MAXB	0.0000E+00	AZR	177.092990	RGR	50359.9892		
TC1	45.3000000	H	4355.64291	MACH	0.760013821	Q	729.311825	RANG	2.49019751	VAMI	835.715523	ALFA	-.1829881
MAYB	-5092.11516	GAMA	-86.7848622	LATV	40.6633948	LONV	-72.6183649	ELRLH	-87.1749347	AZRLN	75.6852496	GMT	45.30000
VDR	-834.400091	RB1	27.3100000	DVDR	-14.3757143	VCAL	790.646092	BANK	-4.60394182	OMXB	0.0000E+00	DOMXB	0.0000E+
ELR	4.86132084	BETA	1.38661999	MAZB	0.0000E+00	MAXB	0.0000E+00	AZR	177.071009	RGR	50332.4523		
TC1	45.6000000	H	4104.69932	MACH	0.763127748	Q	742.197454	RANG	2.49341619	VAMI	839.885244	ALFA	-.1960015
MAYB	-11636.9604	GAMA	-86.8985852	LATV	40.6634093	LONV	-72.6182970	ELRLH	-87.2606060	AZRLN	75.8370192	GMT	45.60000
VDR	-838.655093	RB1	27.3100000	DVDR	-13.9910429	VCAL	797.242969	BANK	-4.75468716	OMXB	0.0000E+00	DOMXB	0.0000E+
ELR	4.57710947	BETA	1.25608962	MAZB	0.0000E+00	MAXB	0.0000E+00	AZR	177.049126	RGR	50306.0685		
TC1	45.9000000	H	3852.49641	MACH	0.766145349	Q	755.118668	RANG	2.49661512	VAMI	843.958048	ALFA	-.2070769
MAYB	-17366.6559	GAMA	-86.9909590	LATV	40.6634237	LONV	-72.6182294	ELRLH	-87.3426519	AZRLN	75.9918371	GMT	45.90000
VDR	-842.794452	RB1	27.3100000	DVDR	-13.6032186	VCAL	803.781027	BANK	-4.90848785	OMXB	0.0000E+00	DOMXB	0.0000E+
ELR	4.29117241	BETA	1.17938064	MAZB	0.0000E+00	MAXB	0.0000E+00	AZR	177.027368	RGR	50280.8682		
TC1	46.2000000	H	3599.06908	MACH	0.769056739	Q	768.051052	RANG	2.49979068	VAMI	847.922675	ALFA	-.2108297
MAYB	-19500.7038	GAMA	-87.0728461	LATV	40.6634380	LONV	-72.6181623	ELRLH	-87.4192313	AZRLN	76.1457217	GMT	46.20000
VDR	-846.816363	RB1	27.3100000	DVDR	-13.2086833	VCAL	810.248279	BANK	-5.06136592	OMXB	0.0000E+00	DOMXB	0.0000E+
ELR	4.00355955	BETA	1.14000986	MAZB	0.0000E+00	MAXB	0.0000E+00	AZR	177.005760	RGR	50256.8808		
TC1	46.5000000	H	3344.45282	MACH	0.771854075	Q	780.973134	RANG	2.50294144	VAMI	851.770077	ALFA	-.2093867
MAYB	-18995.1440	GAMA	-87.1536896	LATV	40.6634521	LONV	-72.6180957	ELRLH	-87.4895362	AZRLN	76.2959031	GMT	46.50000
VDR	-850.719272	RB1	27.3100000	DVDR	-12.8102374	VCAL	816.634771	BANK	-5.21055322	OMXB	0.0000E+00	DOMXB	0.0000E+
ELR	3.71432244	BETA	1.10042972	MAZB	0.0000E+00	MAXB	0.0000E+00	AZR	176.984312	RGR	50234.1309		
TC1	46.8000000	H	3088.68348	MACH	0.774538178	Q	793.880210	RANG	2.50606772	VAMI	855.500739	ALFA	-.2047784
MAYB	-16813.3013	GAMA	-87.2316116	LATV	40.6634661	LONV	-72.6180296	ELRLH	-87.5536472	AZRLN	76.4410865	GMT	46.80000
VDR	-854.502316	RB1	27.3100000	DVDR	-12.4098859	VCAL	822.939732	BANK	-5.35475471	OMXB	0.0000E+00	DOMXB	0.0000E+
ELR	3.42351392	BETA	1.06064035	MAZB	0.0000E+00	MAXB	0.0000E+00	AZR	176.963020	RGR	50212.6399		
TC1	47.1000000	H	2831.79686	MACH	0.777131939	Q	806.813347	RANG	2.50916985	VAMI	859.139545	ALFA	-.2390724
MAYB	-35210.9738	GAMA	-87.2754341	LATV	40.6634800	LONV	-72.6179640	ELRLH	-87.6118429	AZRLN	76.5803843	GMT	47.10000
VDR	-858.168361	RB1	27.3100000	DVDR	-12.0397630	VCAL	829.186207	BANK	-5.49308249	OMXB	0.0000E+00	DOMXB	0.0000E+

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 ELR    3.13118739 BETA  0.989618900 MAZB   0.0000E+00 MAXB   0.0000E+00 AZR    176.941885 RGR    50192.4284

 TC1     47.4000000 H      2573.82655 MACH  0.779623214 Q      819.742273 RANG   2.51223697 VAMI   862.672705 ALFA  -.2704252
 MAYB   -52392.6955 GAMA  -87.3139602 LATV   40.6634936 LONV  -72.6178991 ELRLH -87.6594993 AZRLN  76.7011500 GMT    47.40000(
 VDR    -861.724907 RB1    27.3100000 DVDR  -11.6672075 VCAL   835.359675 BANK  -5.61289944 OMXB   0.0000E+00 DOMXB  0.0000E+(
 ELR     2.83739318 BETA  0.904889369 MAZB   0.0000E+00 MAXB   0.0000E+00 AZR    176.920977 RGR    50173.5345

 TC1     47.7000000 H      2314.80599 MACH  0.782002241 Q      832.640365 RANG   2.51525714 VAMI   866.089018 ALFA  -.2785746
 MAYB   -57384.3088 GAMA  -87.3560202 LATV   40.6635069 LONV  -72.6178352 ELRLH -87.6907462 AZRLN  76.7860049 GMT    47.70000(
 VDR    -865.167027 RB1    27.3100000 DVDR  -11.2780477 VCAL   841.448025 BANK  -5.69683892 OMXB   0.0000E+00 DOMXB  0.0000E+(
 ELR     2.54218233 BETA  0.823497214 MAZB   0.0000E+00 MAXB   0.0000E+00 AZR    176.900378 RGR    50155.9975

 TC1     48.0000000 H      2054.77014 MACH  0.784271447 Q      845.506054 RANG   2.51822645 VAMI   869.390746 ALFA  -.2709336
 MAYB   -53821.6234 GAMA  -87.3926589 LATV   40.6635200 LONV  -72.6177723 ELRLH -87.7035760 AZRLN  76.8266266 GMT    48.00000(
 VDR    -868.490708 RB1    27.3100000 DVDR  -10.8785730 VCAL   847.452259 BANK  -5.73658283 OMXB   0.0000E+00 DOMXB  0.0000E+(
 ELR     2.24560925 BETA  0.745498658 MAZB   0.0000E+00 MAXB   0.0000E+00 AZR    176.880113 RGR    50139.8428

 TC1     48.3000000 H      1793.75514 MACH  0.786412687 Q      858.292940 RANG   2.52114803 VAMI   872.557330 ALFA  -.2280059(
 MAYB   -30608.9782 GAMA  -87.4467679 LATV   40.6635328 LONV  -72.6177105 ELRLH -87.6992874 AZRLN  76.8245591 GMT    48.30000(
 VDR    -871.691111 RB1    27.3100000 DVDR  -10.4540561 VCAL   853.350913 BANK  -5.73367256 OMXB   0.0000E+00 DOMXB  0.0000E+(
 ELR     1.94773088 BETA  0.657581646 MAZB   0.0000E+00 MAXB   0.0000E+00 AZR    176.860162 RGR    50125.0831

 TC1     48.6000000 H      1531.79894 MACH  0.788446280 Q      871.037466 RANG   2.52403573 VAMI   875.610847 ALFA  -.1923918
 MAYB   -11023.8883 GAMA  -87.4802914 LATV   40.6635454 LONV  -72.6176493 ELRLH -87.6841700 AZRLN  76.7956086 GMT    48.60000(
 VDR    -874.764270 RB1    27.3100000 DVDR  -10.0358567 VCAL   859.164403 BANK  -5.70390165 OMXB   0.0000E+00 DOMXB  0.0000E+(
 ELR     1.64860723 BETA  0.569812143 MAZB   0.0000E+00 MAXB   0.0000E+00 AZR    176.840433 RGR    50111.7131

 TC1     48.9000000 H      1268.93927 MACH  0.790376736 Q      883.742746 RANG   2.52690295 VAMI   878.555878 ALFA  -.1718499
 MAYB    456.419868 GAMA  -87.4913396 LATV   40.6635579 LONV  -72.6175885 ELRLH -87.6648050 AZRLN  76.7566870 GMT    48.90000(
 VDR    -877.713885 RB1    27.3100000 DVDR  -9.63021718 VCAL   864.896045 BANK  -5.66416853 OMXB   0.0000E+00 DOMXB  0.0000E+(
 ELR     1.34829797 BETA  0.486016011 MAZB   0.0000E+00 MAXB   0.0000E+00 AZR    176.820835 RGR    50099.7273

 TC1     49.0922864 H      1100.00000 MACH  0.791559384 Q      891.861502 RANG   2.52873376 VAMI   880.385765 ALFA  -.1651585
 MAYB    4249.07449 GAMA  -87.4900362 LATV   40.6635659 LONV  -72.6175497 ELRLH -87.6520998 AZRLN  76.7313799 GMT    49.09228(
 VDR    -879.541142 RB1    27.3100000 DVDR  -9.37606094 VCAL   868.525495 BANK  -5.63834205 OMXB   0.0000E+00 DOMXB  0.0000E+(
 ELR     1.15521681 BETA  0.434510221 MAZB   0.0000E+00 MAXB   0.0000E+00 AZR    176.808318 RGR    50092.7739

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     EVENT ESN   30                                          DATE / TIME   15-03-04  13:36:12
     TIME =      49.092          TYPE = PRIMARY-ORDERED        CASE = 1.     CP =  0.281   CYCLES =   495.
           EVENT CAUSED BY
+                                  H      =  1.10000000E+03                TG MODEL - G1
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 TC1     49.0922864 H      1100.00000 MACH  0.791559384 Q      891.861502 RANG   2.52873376 VAMI   880.385765 ALFA   0.1590E-1
 MAYB   -376900.517 GAMA  -87.4900362 LATV   40.6635659 LONV  -72.6175497 ELRLH -87.4900362 AZRLN  66.4316943 GMT    49.09228(
 VDR    -879.541142 RB1    27.3100000 DVDR  -15.6833891 VCAL   868.525495 BANK   0.4665E-12 OMXB   0.0000E+00 DOMXB  0.0000E+(
 ELR     1.15521681 BETA  -0.1590E-13 MAZB   0.0000E+00 MAXB   0.0000E+00 AZR    176.808318 RGR    50092.7739

 TC1     49.0922864 H      1100.00000 MACH  0.791559384 Q      891.861502 RANG   2.52873376 VAMI   880.385765 ALFA   0.1590E-1
 MAYB    0.0000E+00 GAMA  -87.4900362 LATV   40.6635659 LONV  -72.6175497 ELRLH -87.4900362 AZRLN  66.4316943 GMT    49.09228(
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 VDR   -879.541142 RB1    27.3100000 DVDR  -15.6833996 VCAL   868.525495 BANK   0.4665E-12 OMXB   0.0000E+00 DOMXB  0.0000E+(
 ELR    1.15521681 BETA  -0.1590E-13 MAZB   0.0000E+00 MAXB   0.0000E+00 AZR    176.808318 RGR    50092.7739

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     EVENT ESN   40                                                    DATE / TIME   15-03-04  13:36:12
     TIME =      49.092          TYPE = PRIMARY-ORDERED          CASE = 1.     CP =  0.281   CYCLES =   495.
           EVENT CAUSED BY
+                                  TDURP  =  0.00000000E+00                    TG MODEL - G1
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  TC1    49.0922864 H      1100.00000 MACH  0.791559384 Q      891.861502 RANG   2.52873376 VAMI   880.385765 ALFA   0.1590E-1
  MAYB   0.0000E+00 GAMA  -87.4900362 LATV   40.6635659 LONV  -72.6175497 ELRLH -87.4900362 AZRLN  66.4316943 GMT    49.09228(
  VDR   -879.541142 RB1    27.3100000 DVDR  -15.6833996 VCAL   868.525495 BANK   0.4665E-12 OMXB   0.0000E+00 DOMXB  0.0000E+(
  ELR    1.15521681 BETA  -0.1590E-13 MAZB   0.0000E+00 MAXB   0.0000E+00 AZR    176.808318 RGR    50092.7739

  TC1    49.2000000 H      1005.17611 MACH  0.792813010 Q      897.781896 RANG   2.52975749 VAMI   882.069631 ALFA  -0.1217E-(
  MAYB   0.0000E+00 GAMA  -87.4893670 LATV   40.6635703 LONV  -72.6175280 ELRLH -87.4893670 AZRLN  67.1055861 GMT    49.20000(
  VDR   -881.222941 RB1    27.3100000 DVDR  -15.5438684 VCAL   871.216603 BANK   0.2332E-12 OMXB   0.0000E+00 DOMXB  0.0000E+(
  ELR    1.04681931 BETA  -0.3222E-07 MAZB   0.0000E+00 MAXB   0.0000E+00 AZR    176.801318 RGR    50089.1285

  TC1    49.5000000 H       740.130469 MACH  0.796210185 Q      914.258969 RANG   2.53260207 VAMI   886.661604 ALFA   0.4612E-1
  MAYB   0.0000E+00 GAMA  -87.5150366 LATV   40.6635826 LONV  -72.6174677 ELRLH -87.5150366 AZRLN  67.2040982 GMT    49.50000(
  VDR   -885.827818 RB1    27.3100000 DVDR  -15.1551833 VCAL   878.640337 BANK   0.0000E+00 OMXB   0.0000E+00 DOMXB  0.0000E+(
  ELR   0.743753746 BETA  -0.1495E-12 MAZB   0.0000E+00 MAXB   0.0000E+00 AZR    176.781859 RGR    50079.9294

  TC1    49.8000000 H       473.720748 MACH  0.799493119 Q      930.768390 RANG   2.53543671 VAMI   891.136641 ALFA   0.3976E-1
  MAYB   0.0000E+00 GAMA  -87.5408615 LATV   40.6635949 LONV  -72.6174076 ELRLH -87.5408615 AZRLN  67.2678904 GMT    49.80000(
  VDR   -890.315972 RB1    27.3100000 DVDR  -14.7657205 VCAL   885.984800 BANK  -0.2381E-12 OMXB   0.0000E+00 DOMXB  0.0000E+(
  ELR   0.439024130 BETA  -0.8906E-13 MAZB   0.0000E+00 MAXB   0.0000E+00 AZR    176.762457 RGR    50072.1523

  TC1    50.1000000 H       205.981997 MACH  0.802662353 Q      947.304568 RANG   2.53826128 VAMI   895.494918 ALFA   0.4930E-1
  MAYB   0.0000E+00 GAMA  -87.5662713 LATV   40.6636070 LONV  -72.6173476 ELRLH -87.5662713 AZRLN  67.3320841 GMT    50.10000(
  VDR   -894.687187 RB1    27.3100000 DVDR  -14.3756193 VCAL   893.248932 BANK   0.1203E-12 OMXB   0.0000E+00 DOMXB  0.0000E+(
  ELR   0.132687350 BETA  -0.1050E-12 MAZB   0.0000E+00 MAXB   0.0000E+00 AZR    176.743115 RGR    50065.8200

  TC1    50.2629619 H        60.0000000 MACH  0.804336324 Q      956.296050 RANG   2.53979134 VAMI   897.813360 ALFA  -0.1590E-1
  MAYB   0.0000E+00 GAMA  -87.5799043 LATV   40.6636135 LONV  -72.6173152 ELRLH -87.5799043 AZRLN  67.3671249 GMT    50.26296(
  VDR   -897.012584 RB1    27.3100000 DVDR  -14.1635004 VCAL   897.160684 BANK   0.6048E-12 OMXB   0.0000E+00 DOMXB  0.0000E+(
  ELR   -.034369977 BETA  -0.2544E-13 MAZB   0.0000E+00 MAXB   0.0000E+00 AZR    176.732632 RGR    50062.9937

-------------------------------------------------------------------------------------------------------------------
     EVENT ESN   50                                                    DATE / TIME   15-03-04  13:36:12
     TIME =      50.263          TYPE = PRIMARY-ORDERED          CASE = 1.     CP =  0.281   CYCLES =   510.
           EVENT CAUSED BY
+                                  H      =  6.00000000E+01                    TG MODEL - G7
-------------------------------------------------------------------------------------------------------------------

  TC1    50.2629619 H        60.0000000 MACH  0.804336324 Q      956.296050 RANG   2.53979134 VAMI   897.813360 ALFA  -0.1590E-1
```

```
   MAYB    0.0000E+00 GAMA  -87.5799043 LATV   40.6636135 LONV  -72.6173152 ELRLH -87.5799043 AZRLN  67.3671249 GMT     50.262961
   VDR    -897.012584 RB1    27.3100000 DVDR  -14.1635004 VCAL   897.160684 BANK    0.6048E-12 OMXB   0.0000E+00 DOMXB  0.0000E+(
   ELR    -.034369977 BETA  -0.2544E-13 MAZB   0.0000E+00 MAXB   0.0000E+00 AZR    176.732632 RGR    50062.9937
0NO.  1  TAPE75 ENDS AT TD=   50.263


     EVENT SUMMARY


          VEHICLE NUMBER 1

                         0.000     2
                         0.000     3
                         0.000    10
                         0.000    11
                         0.000    12
                         0.000    13
                        19.212    20
                        49.092    30
                        49.092    40
                        50.263    50


      MAXIMUM NUMBER OF INTEGRATIONS WAS  35 , STORAGE WOULD HAVE ALLOWED(NIV)  50 .
0   BUCKET SIZE FOR THIS CASE       2660
1
 CONTROL CARD    1.0
 ------------------------------------------  CONTROL CARD  1.00  ------------------------------------
0 BUCKET SIZE REQUESTED IS163841
0 CPU TIME AT CALL TO INP1M =   0.0000
0 CPU TIME AT RETURN FROM INP1M =   0.1094
  CPU TIME USED BY INP1M MODULE =   0.1094
0 CPU TIME AT CALL TO INP2M     =   0.1094
  CPU TIME AT RETURN FROM INP2M =   0.1719
  CPU TIME USED BY INP2M MODULE =   0.0625
 ---- CASE 1. ----
 ESN  2 CASE=  1. AT TD=     0.0
 ESN  2 CASE=  1. AT TD=     0.0
 ESN  3 CASE=  1. AT TD=     0.0
 ESN  3 CASE=  1. AT TD=     0.0
 ESN 10 CASE=  1. AT TD=     0.0
 ESN 10 CASE=  1. AT TD=     0.0
 ESN 11 CASE=  1. AT TD=     0.0
 ESN 11 CASE=  1. AT TD=     0.0
 ESN 12 CASE=  1. AT TD=     0.0
 ESN 12 CASE=  1. AT TD=     0.0
 ESN 13 CASE=  1. AT TD=     0.0
 ESN 13 CASE=  1. AT TD=     0.0
 ESN 20 CASE=  1. AT TD=    19.2
 ESN 20 CASE=  1. AT TD=    19.2
 ESN 30 CASE=  1. AT TD=    49.1
 ESN 30 CASE=  1. AT TD=    49.1
 ESN 40 CASE=  1. AT TD=    49.1
```

```
 ESN 40 CASE=  1. AT TD=    49.1
 ESN 50 CASE=  1. AT TD=    50.3
 ESN 50 CASE=  1. AT TD=    50.3
0 BUCKET SIZE REQUESTED IS163841
0 CPU TIME AT CALL TO INP1M =    0.5469
0 CPU TIME AT RETURN FROM INP1M =   0.5469
  CPU TIME USED BY INP1M MODULE =   0.0000
0 CPU TIME AT CALL TO INP2M     =   0.5469
```

```
********H    RUN SETUP FOR TWA FLIGHT 800 ANALYSIS          ******
********H    USES BOEING'S SECOND ESTIMATE CL-CD DATA
********H    AERO CENTER OF PRESSURE IS INPUT (SEE ARG2)
********H    EVENT 13 STARTS PROBLEM                        ******
********H    EVENT 30 STARTS POINT MASS (WING BREAK)        ******
********H    EVENTS 21 MARKS MAXIMUM ALTITUDE               ******
********H    Forces altitude up using CRVT table            ******
********H    Uses Rich's 15 Jan 98 radar data               ******
       2L      0 0.                  11.0          D     2  G1
         D     3GMT                  4 0.0         D     5FP1
               6 0.0                 7 0.0               8 0.0
       3L      0 0.                  11.0          D     2  G1
         D     3TLP                  4 0.0         D     5FP1
               6 0.0                 7 0.0               8 0.0
      10L      0 0.                  11.0          D     2  G1
         D     3TLP                  4 0.0         D     5FP1
               6 0.0                 7 0.0               8 0.0
      11L      0 0.                  11.0          D     2  G1
         D     3TLP                  4 0.0         D     5FP1
               6 0.0                 7 0.0               8 0.0
      12L      0 0.                  11.0          D     2  G1
         D     3TLP                  4 0.0         D     5FP1
               6 0.0                 7 0.0               8 0.0
      13L      0 0.                  11.0          D     2  G1
         D     3TLP                  4 0.0         D     5FP1
               6 0.0                 7 0.0               8 0.0
      20L      0 0.                  11.0          D     2  G7
         D     3VDR                  4 0.0         D     5DVDR
               6 0.0                 7 0.0               8 0.0
      30L      0 0.                  11.0          D     2  G1
         D     3H                    4 1100.       D     5VDR
               6 0.0                 7 0.0               8 0.0
      40L      0 0.0                 11.0          D     2  G1
         D     3TDURP                4 0.0         D     5FP1
               6 0.0                 7 0.0               8 0.0
      50L      0 0.                  11.0          D     2  G7
         D     3H                    4 60.0        D     5VDR
               6 0.0                 7 0.0               8 0.0
      50L      0 0.                  12.0          D     2  G1
         D     3TC1                  4 80.         D     5FP1
               6 0.0                 7 0.0               8 0.0
MPEXM000  ITRF  0.0
TSPXM  2  FESN   50.
************************************************************************
************************************************************************
TRAKM  2 DIN     B            DGEN    1
TRAKM  2  CTSID  2.0           HSLR   30.0          LATR   40.8008
TRAKM  2  L0NR   -72.6276      ELRK   -1.0          ELRCC  90.0
ITIFM  2  T1VAL  1.0           T2VAL  1.0          T3VAL  1.0
PFRPM  0  RSED1F 1.0           MAXKF  9.0          QIMPF  2.0
PFRPM  0  C0VF   1.0           ITPRF  -9.0         PINF   0.0
PFRPM  0  I1FL   2.0           T1MD   -1.0         T2MD   -1.0
PFRPM  0TDT1CVT GMT           D      GMT
                RANG          D      RANG
        *   T1MD SECOND AND THIRD VALUES ARE THE NUMBER OF POINTS IN THE
        *   T1VAL TABLE FOLLOWED BY THE INVERSE OF THE SIGMA ACCURACY
        *   (IN THIS CASE IT IS 1/0.05 NAUTICAL MILES).
PFRPM000T T1MD  1.                 7.0                  20.
PFRPM  0  BNDS   200.              1 200.               2 200.
PFRPM  0       3 200.              4 200.               5 200.
PFRPM  0       6 200.              7 200.               8 200.
```

```
PFRPM  0        9 200.              10 200.              11 200.
PFRPM  0       12 200.              13 200.              14 200.
ITERM000T ITVT  1.0                   50.                  13.
          D     ARG1T                 -4.                  0.001
                0.                    0.                   0.
                0.                    0.                   0.
                2.0                   50.                  13.
          D     ARG1T                 -6.                  0.001
                0.                    0.                   0.
                0.                    0.                   0.
                3.0                   50.                  13.
          D     ARG1T                 -8.                  0.001
                0.                    0.                   0.
                0.                    0.                   0.
                4.0                   50.                  13.
          D     ARG1T                 -10.                 0.001
                0.                    0.                   0.
                0.                    0.                   0.
                5.0                   50.                  13.
          D     ARG1T                 -12.                 0.001
                0.                    0.                   0.
                0.                    0.                   0.
                6.0                   50.                  13.
          D     ARG1T                 -14.                 0.001
                0.                    0.                   0.
                0.                    0.                   0.
                7.0                   50.                  13.
          D     ARG1T                 -16.                 0.001
                0.                    0.                   0.
                0.                    0.                   0.
                8.0                   50.                  13.
          D     ARG1T                 -18.                 0.001
                0.                    0.                   0.
                0.                    0.                   0.
                9.0                   50.                  13.
          D     ARG1T                 -20.                 0.001
                0.                    0.                   0.
                0.                    0.                   0.
ITIFM  0  T1VAL 1.0
ITIFM  0T T1VAL 22.8                  1.90
                27.5                  2.02
                32.2                  2.21
                36.9                  2.39
                41.6                  2.48
                46.3                  2.56
                51.0                  2.51
ITIFM000T CVRT  1.                    0.                   50.
                0.            D       TC1                  .0
                49.0                  .0                   .0
                .0                    .0                   .0
                2.                    0.                   50.
                0.            D       RANG                 .0
                2.51                  .0                   .0
                .0                    .0                   .0
                3.                    0.                   20.
                0.            D       H                    .0
                17000.                .0                   .0
                .0                    .0                   .0
PFRPM000  MD1T  1.             MD2T   1.
PFRPM000T MD1T  1.                    1.                   1.0
PFRPM000T MD2T  1.                    1.                   32.
```

```
PFRPM000T MD3T  1.                      1.                      0.005
************************************************************************
************************************************************************
ENVRM  2T GRAVTT 2.00000000              0.0                     0.00108271604
                  0.0                    3.00000000              0.0
                 -0.2630140E-05          0.0                     4.00000000
                  0.0                   -0.2349500E-05           0.0
SERVM  2 IITPR2T 6
INFXM  2ICTPRI2T 0.3
INFXM  2  TPRV2T 1.
INFXM  2T TPRV2T TC1                    H                       MACH
                 Q                      RANG                    VAMI
                 CZ                     CX                      CM
                 FAZB                   FAXB                    OMYB
                 ASZB                   FTXB                    D0MYB
                 ALFA                   MAYB                    IYY
                 GAMA                   LATV                    L0NV
                 ELRLH                  AZRLN                   GMT
                 CXB                    VDR                     RB1
                 CM1T                   CL                      CD
                 ASXB                   DVDR                    VCAL
                 ARGA                   ARGB                    BANK
                 ARGF                   OMXB                    D0MXB
                 ELR                    BETA                    CN
                 MAZB                   MAXB                    ARGC
                 ARGD                   ARGE                    ARGF
                 ARGG                   ARGH                    ARGI
                 AZR                    RGR
INFXM  2  PL0T2T -1
INFXM  2ICPLIN2T 0.3
INFXM  2T PL0T2T TC1                    H                       MACH
                 Q                      RANG                    VAMI
                 CZ                     CX                      CM
                 FAZB                   FAXB                    OMYB
                 ASZB                   FTXB                    D0MYB
                 ALFA                   MAYB                    IYY
                 GAMA                   LATV                    L0NV
                 ELRLH                  AZRLN                   GMT
                 CXB                    VDR                     RB1
                 CM1T                   CL                      CD
                 ASXB                   DVDR                    VCAL
                 ARGA                   ARGB                    BANK
                 ARGF                   OMXB                    D0MXB
                 ELR                    BETA                    CN
                 MAZB                   MAXB                    ARGC
                 ARGD                   ARGE                    ARGF
                 ARGG                   ARGH                    ARGI
                 AZR                    RGR
CYCXM  2  DTEA   0.10          Q0P1    1.0             TC1     0.0
CYCXM  2  LFDT1 0.10           TC4     0.0
CYCXM  2  N0ISB  0.0
DPGXM 12 IGCF    0.0           TRKF    0.0
ENVRM  2  ATCF   4.0           ATUF    0.0             AWT     1.0
ENVRM  2  GRVDF  1.0           VWF     -1.0
ENVRM  2I VWT    H      6
                  0.0                   12.0
                  1000.0                12.0
                  2000.0                14.0
                  3000.0                17.0
                  4000.0                17.0
                  5000.0                19.0
```

```
                  6000.0                19.0
                  7000.0                17.0
                  8000.0                16.0
                  9000.0                12.0
                  10000.0               12.0
                  11000.0               12.0
                  12000.0               16.0
                  13000.0               16.0
                  14000.0               17.0
                  15000.0               19.0
                  16000.0               21.0
                  17000.0               29.0
                  18000.0               33.0
ENVRM  2I AWT   H      6
                  0.0                   270.0
                  1000.0                270.0
                  2000.0                280.0
                  3000.0                285.0
                  4000.0                290.0
                  5000.0                303.0
                  6000.0                310.0
                  7000.0                315.0
                  8000.0                320.0
                  9000.0                330.0
                  10000.0               335.0
                  11000.0               320.0
                  12000.0               295.0
                  13000.0               290.0
                  14000.0               300.0
                  15000.0               303.0
                  16000.0               305.0
                  17000.0               315.0
                  18000.0               315.0
INTXM  2 INIV    50.0          DTMAX  2.0           INTGF 2.0
PR0PM  2 DL0    U
RM0TM  2  ETA2   0.0           ETA3   70.93         DHI    2
RM0TM  2 DIN    C
SERVM  2 IITPRNT 6.0
**********  BEFORE BOOM CRUISE VELOCITY=619.05 FT/SEC (366.8 KNOTS).
**********  THIS IS BASED ON IAS=292 KNOTS AND THE ATMOSPHERE AND
**********  AND WINDS USED HERE.
TM0TM  2  AZL   70.93          VAMI0  644.0         DIN     C
TM0TM  2  LATL  40.65         DL0     1             L0NL   -72.67
TM0TM  2  AZVA0 70.93          GAMA0  2.1           HSLL    13760.0
TM0TM  2  ALFA0 4.02559        OMYB0  -0.
TM0TM 10 DL0    1              TMTF   1.00000000    HSLL  0.0
INFXM  2  EVPF   0.00000000    PL0TT -1.00000000
PR0PM 11 DL0    1
TM0TM 12 DL0    1
AERMM  2 DIN    C             DL0    2
AERMM 10 DIN    C             DL0    2
AERMM  2  CLDF  0.0            CNSF   6.0           CMSF  0.0
AERMM  2  CXSF  0.0            CM0MT  0.0
AERMM  2  S     5500.0         RB1    27.31
AERMM  2I CZ1T  ALFA    6      NORMAL FORCE COEFFICIENT
                  -180.0                0.0000
                  -170.0               -0.6320
                  -160.0               -0.9280
                  -140.0               -1.1600
                  -120.0               -1.2560
                   -90.0               -1.6200
```

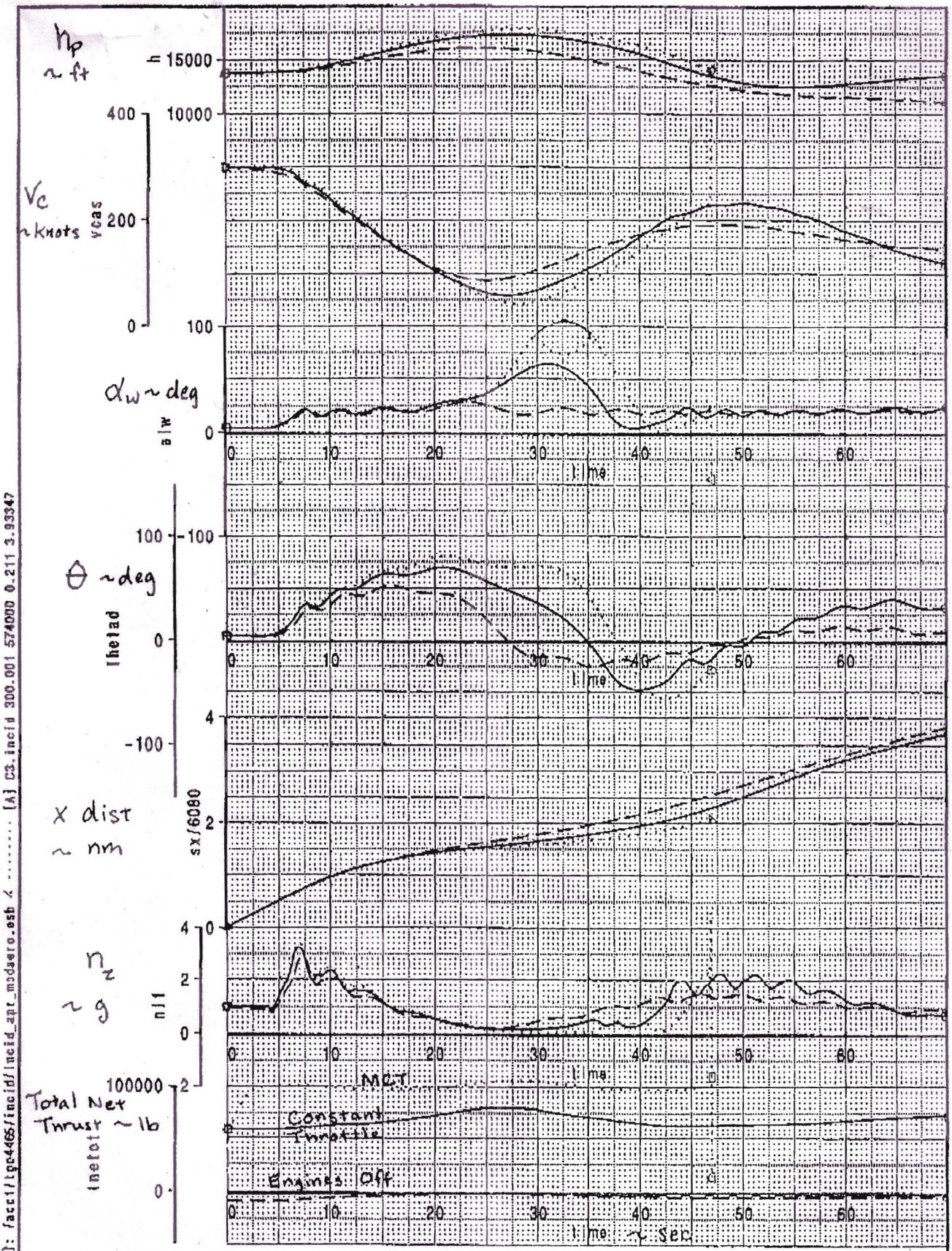
-40.0	-1.4500
-20.0	-1.1600
-12.0	-0.8900
-8.0	-0.6706
-4.0	-0.3265
-2.0	-0.1556
0.0	0.0147
2.0	0.1845
4.0	0.3542
6.0	0.5198
8.0	0.6791
10.0	0.7900
12.0	0.8972
14.0	0.9733
16.0	1.0476
18.0	1.0892
20.0	1.1600
25.0	1.2541
30.0	1.3400
40.0	1.4500
60.0	1.5700
90.0	1.6200
120.0	1.2560
140.0	1.1600
160.0	0.9280
170.0	0.6320
180.0	0.0000

AERMM 2 CX1T -1.0 CZ1T -1.0 CM1T 0.0
AERMM 2I CX1T ALFA 6 AXIAL FORCE COEFFICIENT

-180.0	-0.0150
-170.0	0.0483
-160.0	0.0021
-140.0	0.0080
-120.0	0.0035
-90.0	0.0000
-40.0	-0.0080
-20.0	-0.0170
-12.0	-0.0230
-8.0	0.0088
-4.0	0.0226
-2.0	0.0212
0.0	0.0196
2.0	0.0127
4.0	0.0001
6.0	-0.0197
8.0	-0.0411
10.0	-0.0483
12.0	-0.0524
14.0	-0.0500
16.0	-0.0456
18.0	-0.0312
20.0	-0.0210
25.0	-0.0136
30.0	-0.0114
40.0	-0.0080
60.0	-0.0035
90.0	0.0000
120.0	-0.0035
140.0	-0.0080
160.0	-0.0021
170.0	-0.0483

```
                  180.0                -0.0150
AERMM  2I CM1T  ALFA    6       MOMENT COEFFICIENT
                 -181.0                 1.0
                  181.0                 1.0
AERMM 13ICCM0MT 1.0
SERVM 13  ARG1T 1.0
SERVM 13I ARG1T TC1     6       CENTER OF PRESSURE (FT) (CG AT 120.67)
                 -100.                  120.3
                    0.                  119.0253480
                    2.5                 120.4804453
                    5.0                 120.9063451
                    7.0                 121.1161539
                   21.9593068           122.6962042
                   23.7958938           119.7737504
                   27.9065998           119.9909770
                   34.6842718           121.6788974
                   40.                  122.2024562
                   50.                  122.
SERVM 13I ARG2T ALFA    6       NORMAL FORCE MULTIPLIER
                 -181.0                 -1.0
                  181.0                 -1.0
SERVM 13I ARG3T ALFA    6       AXIAL FORCE MULTIPLIER
                 -181.0                 -1.0
                  181.0                 -1.0
SERVM 13I ARG4T TC1     6       AXIAL FORCE BIAS MULTIPLIER
                  0.0                    0.0
                  0.5                    0.0381
                  1.0                    0.1464
                  1.5                    0.3087
                  2.0                    0.5
                  2.5                    0.6913
                  3.0                    0.8535
                  3.5                    0.9619
                  4.0                    1.0
                  100.0                  1.0
********H    NOTE: CX BIAS IS CALCULATED AS ARG1 AND SHIFTED INTO CXB.
********H             USING CXB=-K1*COS(ALFA)-K2*COS(ALFA)**2
********H           ARG2 CALCULATES CM--A2C1=1/RB1, A2C2=CGREF/RB1 AND
********H           ARG1T = CENTER OF PRESSURE (FT)
********H           ARG3 CALCULATES THRUST MULTIPLIER, F(ALFA)
********H           ARG6 CALCULATES RANGE RATE
********H           ARG7 CALCULATES LIFT COEFFICIENT
********H           ARG8 CALCULATES DRAG COEFFICIENT
********H           ARG9 CALCULATES MOMENT COEFF ABOUT 1/4C OF MAC
JUNKM 10 DIN      U           DL0    1
JUNKM 13  VRF1  3.0           DVTBR1 CXB           DRVAR1 ARG1
JUNKM 13  VRF2  3.0           DVTBR2 CM1T          DRVAR2 ARG2
JUNKM 13  VRF3  3.0           DVTBR3 FTT           DRVAR3 ARG3
JUNKM 13  VRF4  3.0           DVTBR4 CZ1T          DRVAR4 ARG4
JUNKM 13  VRF5  3.0           DVTBR5 CX1T          DRVAR5 ARG5
SERVM 13  A1C1  -0.041        DA1V1  ALFA           A1FV1 4.0
SERVM 13  A1C2  -0.025        DA1V3  ALFA           A1FV3 1504.
SERVM 13 DA1V2  ARG4T         DA1V4  ARG4T          A1FV2 9.0
SERVM 13  A1FV4 9.0
SERVM 13  A2C1  0.03662       DA2V1  ARG1T          A2FV1 9.0
SERVM 13  A2C2  -4.4185       DA2V2  CZ            DA2V3  CZ
SERVM 13  A3C1  0.45          DA3V1  ALFA           A3FV1 4.0
SERVM 13  A3C2  0.05          DA3V3  ALFA           A3FV3 1504.
SERVM 13  A3B   0.5
SERVM 13  A4C1  1.0           DA4V1  ARG2T          A4FV1 9.0
SERVM 13  A5C1  1.0           DA5V1  ARG3T          A5FV1 9.0
```

```
SERVM 13  A6C1  1.0          DA6V1  VAMI          DA6V2  GAMA
SERVM 13  A6FV2 4.
SERVM 13  A7C1  -1.0         DA7V1  CZ            DA7V2  ALFA
SERVM 13  A7C2  1.0          DA7V3  CX            DA7V4  ALFA
SERVM 13  A7FV2 4.0           A7FV4 3.
SERVM 13  A8C1  -1.0         DA8V1  CZ            DA8V2  ALFA
SERVM 13  A8C2  -1.0         DA8V3  CX            DA8V4  ALFA
SERVM 13  A8FV2 3.0           A8FV4 4.
SERVM 13  A9C1  1.0          DA9V1  CM            DA9V3  CZ
SERVM 13  A9C2  -0.32955
PR0PM  2 DIN    C            DL0    U
PR0PM  2  WPI   200000.0
STRTM 13  IDW   294606.0
PR0PM  2  DWT   1.0
PR0PM  2I FTT   TC1    6
                -100.0              70620.0
                20000.0             70620.0
PR0PM  2I DWT   TC1    6
                -100.0              10.0
                20000.0             10.0
STRTM  2I IXT   TC1    6
                 -100.0              1000000000.0
                 20000.0             1000000000.0
STRTM  2I IYT   TC1    6
                 -100.0              15780000.0
                 20000.0             15780000.0
STRTM  2I IZT   TC1    6
                 -100.0              1000000000.0
                 20000.0             1000000000.0
********H     FOLLOWING INPUTS CAUSE SWITCH TO BALLISTIC TRAJ  ********
********H     ARG3T IS BALLISTIC DRAG COEFFICIENT               ********
AERMM 30  CZ1T  0.0           CM1T  0.0
AERMM 30ICCX1T  1.0
SERVM 30  ARG2T 0.0           ARG3T 0.066          A2C1   0.0
SERVM 30  A1C1  0.0           A1C2  0.0            CM0MT  0.0
RM0TM 30 DHI    5            DIN     E             RMTF   1.
RMOTM 30  OMYB  0.
DPGXM 30 IGCF   1.
        C       0.0
CONTROL CARD    1.0
```



RELEASE PER COURT ORDER
DATE: MAY 2008

CALC	Overton	8Apr97	REVISED	DATE	Free Response to Mass Prop and Aero Change	747
CHECK					Variation due to Thrust	
APPD.					PRELIMINARY # 1	PSIM
APPD.					BOEING	PAGE