IUE POLICIES AND PROCEDURES

The following items describe various policies and procedures currently in place at the IUE Observatory. These descriptions were originally prepared for the Guest Observer Packet, a mailing sent to all succesful eleventh episode Principal Investigators. We are reprinting them here for general reference. Such policies change with time in response to changing conditions, so please feel free to contact the IUE Observatory staff to clarify issues and to get the most up-to-date information.

We note that there is currently under discussion a new policy concerning use of the aperture mechanism, which is used to close the large apeture. This may be required if an observation is to be performed using the small aperture but some other object or bright nebulosity would fall in the large aperture. In addition, the aperture must be closed in order to obtain wavelength calibration observations. In the past, the aperture has been closed whenever requested by the Guest Observer. In the last year, however, significant problems have been encountered with FES reference point shifts after the aperture has been closed. Problems of this type have been seen before; however recently they have sometimes been quite severe, resulting in shifts of several arcseconds persisting for a day. Such shifts cause difficult problems for many kinds of observations, including blind offsets and observations requiring precise centering or accurate wavelengths. The FES shifts are thought to be due to some form of electronic interference from use of the aperture mechanism.

The new policy under consideration is intended to limit as much as possible the use of the aperture mechanism, in order to prevent the adverse effects of large FES reference shifts on subsequent observations. Prior approval will be required for use of the aperture mechanism, and the use of special GO wavelength calibration observations will be discouraged. For the standard wavelength calibration monitoring program, we have reduced the frequency at which the observations are obtained from twice a month to once per month for each of IUE's functional cameras. The observations are being specifically scheduled on one US2 shift each month, usually the "short shift" at the end of the month. This schedule will be adhered to so that subsequent GO observations should be minimally affected.

Catherine L. Imhoff
June 29, 1988

A Summary of IUE Project Policies and Procedures
(Revison 1 - 25 May 1988)

The following is a brief description of the IUE Project's policies of which GOs should be aware in planning and carrying out IUE research. Further details about these policies are available through the references given below and by consulting the Project Scientist, Yoji Kondo (301-286-6247), the Operations Scientist, Donald K. West (301-286-6901), or the IUE Resident Astronomers (301-286-7537).

The GO has broad latitude to define how the telescope and scientific instruments are to be used during his scheduled observing shifts, subject to general spacecraft constraints and instrument safety considerations. Certain operations (e.g. battery discharge, single or cumulative overexposures of over 50 times, etc.) and non-standard or experimental observing techniques require approval of the Project Scientist before the observing shift, even if the planned activities were discussed in the proposal approved for telescope time.

This year IUE has celebrated its tenth anniversary. As IUE enters its second decade, spacecraft constraints are, of course, becoming more noticable. For most observers, it is a matter of a small reduction in the observable Beta range. However, for others who wish to observe at Beta extremes, significantly overexpose the cameras, or otherwise push IUE to its observational limits, spacecraft constraints are a factor which increasingly needs to be taken into account when planning the observations. For the most part, the nature of the constraints is not that the observations cannot be done, but rather that they must be carefully scheduled to avoid unduly impacting other observers. For example, after discharge, the batteries must be recharged at a Beta between 45 and 95 degrees. A subsequent observer desiring to observe at Beta 100 could not do so until the recharge of the batteries was complete. Thus careful scheduling of battery discharge shifts is needed to accomodate an observer who wishes to discharge the batteries. All other GSFC and VILSPA observers must be considered. Similar concerns exist for other spacecraft constraints. **As a result, an observer wishing to significantly overexpose the cameras, discharge the batteries, perform time-critical observations, etc. is now required to provide such requests, as well as related information, at the beginning of the episode. Details are given below under the appropriate subsections and in the accompanying summary on Scheduling Policies. This required notification to the Observatory is independent of what may be in the proposal itself. If deadlines are not met, the request may be denied due to expected impact on other already-scheduled observers.**

1. IUE Badges and Car Passes

Guest Observers (GOs) officially listed as Principal Investigators (PIs), Lead Investigators (LIs), and Co-Investigators (Co-Is) normally receive special IUE badges and car passes. These should be retained for the several year's duration of the investigator's involvement with IUE. The PI may request a temporary badge for any other visitor to IUE on a visit-by-visit basis. Request for badges and car passes should be made to the Operations Scientist or Resident Astronomer at least two weeks in advance of a visit. Name, affiliation, citizenship, and visit dates must be provided. Badges and car passes prepared on request are normally held for pickup at the GSFC main gate.

Access to GSFC is by badge and car pass. Each GO must have in his or her possession an IUE badge or temporary GSFC visitor's badge. IUE badges are non-transferable and can only be issued to the GOs officially listed as Lead Investigators or Co-Investigators on approved programs. All other GOs may be issued temporary badges on a visit-by-visit basis.

At the beginning of a new episode, the Project will issue badges and car passes to PIs, LIs, and Co-Is whom our records show have not received these items previously. We will intentionally exclude only those non-U.S. Co-Is who are part of large collaborative efforts, having U.S. PIs, and whose travel to GSFC on IUE business is considered unlikely. Nevertheless, omissions may occur. The PI is responsible for ensuring that all persons traveling to GSFC in connection with your program have the proper credentials.

2. Added Targets

It is expected that GOs may wish to add targets to their programs to provide observing flexibility. The PIs should submit target information on an Object Specification Form (see enclosure or Appendix V of IUE Newletter No. 32), with a brief explanatory letter to the Project Scientist at least 30 days in advance of the observing run. Required information includes target name, 1950 coordinates, object class, and the PI's program indentification (five-letter code). Approval is contingent on suitability of the targets to the program and lack of conflict with the approved targets on other GO programs. Approval of the added targets is required for the data to be released to the GO.

3. Assignment of Responsibility

The PI (or LI if appropriate) is responsible for all aspects of the observing program, including scheduling, adding targets, observing, and receiving the data. A PI may delegate these duties to a colleague by informing the IUE Project Scientist or RAs in writing. No prior notification is required for a colleague to perform the observations (assuming he or she has arranged for a GSFC badge and all necessary observing information such as the schedule, skymaps, target lists, etc.). Delegation of either pre-visit planning (e.g. scheduling, receipt of skymaps) or receipt of processed data requires notifying the Observatory in writing. An Assignment of Responsibility Form is available for this purpose (see enclosure or Appendix V of IUE Newsletter No. 32).

4. Battery Discharge

IUE battery discharge outside of Earth shadow season is limited to important observations that are time-critical or otherwise cannot be rescheduled when there are no power problems. It is the responsibility of the PI to determine whether a request to discharge the batteries is needed for a requested specific date or aperture orientation. Requests for battery discharge for the eleventh-episode should be received by no later than June 30, 1988. Requests received after this date will be honored only if, in addition to normal requirements, battery discharge slots are still available and the proposed discharge does not seriously impact other observers who are already in the GSFC and VILSPA schedules. The request providing justification for observing an object at power negative Beta angles (see enclosure) should be submitted to the Project Scientist. It is estimated that for planning purposes, the power positive Beta range for the eleventh episode will be from Beta 30 to Beta 112. Normally, the range increases up to several degrees in the winter months when IUE is slightly closer to the Sun.

5. Camera Overexposures

Heavy camera overexposures have been found to affect subsequent observers with residual images for up to a week following the heavy overexposure on shift long exposures. As a result, it has been found necessary to implement an overexposure policy to balance the interests of programs requiring heavy overexposures against those programs which can expect only very low signal strengths. Programs expecting a single or cumulative overexposure of 50 times or more in either emission or continuum within an 8-hour period should inform

the Observatory by no later than June 30, 1988, of which shifts and/or which dates such overexposures are planned. This information will be used by the GSFC and VILSPA schedulers to schedule these shifts. In addition to the above, the number of shifts on which a single or cumulative overexposure in continuum or emission can exceed 100 times during an 8-hour period is limited to a specific number of slots. Requests for overexposures received after this date will be honored only if they do not impact already scheduled GSFC and VILSPA observers. Requests received after a shift has been scheduled may not be honored. For more details, see the enclosed IUE Large Overexposure Policy.

6. Data Distribution

The PI has exclusive right to new IUE observations for six months following receipt of the data. After this, the data will be available to all US astronomers through the NSSDC and to foreign scientists through the World Data Center (IUE User Guidelines 1979; also NASA IUE Newsletter No. 5, pp. 15-16, 1979). Small requests of up to four images may now be obtained from NSSDC via SPAN. Copies of request forms may be obtained from the Observatory or NSSDC, and are published in NASA IUE Newletter No. 32. A magnetic tape should accompany the request; it will be returned containing the archival data.

7. Data Reprocessing

Requests for reprocessing IUE archival data should be submitted to Donald K. West, Operations Scientist, Code 684, NASA Goddard Space Flight Center, Greenbelt, MD 20771. A copy of the form may be obtained from the Observatory and is published in NASA IUE Newletter No. 32. Data processing for approved requests will be performed on a time available basis with top priority going to PIs of IUE-funded programs.

8. Duplicate Copies of Data Products

Copies of data for official VILSPA collaborators may be routinely requested through the IUE observing staff during the observing run. Only images initiated at one ground station and read down at the other are covered by this Three Agency agreement. The US GO must provide a shipping address for the VILSPA collaborator. All other requests for duplicate data products must be submitted in advance to the Operations Scientist for review. A request from may be obtained at the Observatory. A priority processing request form may be obtained at the Observatory.

9. Priority and Special Processing of Data Products

GOs who wish to have their IUE data processed quickly for use at the GSFC RDAF may routinely request priority processing through the IUE staff before the observing run. All other requests for priority or special processing must be submitted in advance to the Operations Scientist for review. Note that the SIPS staff do not usually process images on weekends. Thus observations taken on a Friday will normally not be available until the following Monday at the earliest. This should be taken into account when scheduling RDAF time to coincide with observing runs.

10. Publication and Acknowledgements

GOs are asked to send preprints and reprints of their IUE-related papers to the IUE Observatory in care of the Operations Scientist. The author's name should be annotated on the title page with the footnote: "Guest Observer with the International Ultraviolet Explorer Satellite" (IUE User Guidelines 1979; also NASA IUE Newsletter No. 5, pp. 15-16, 1979.)

The IUE Project asks that investigators publishing data obtained from the IUE archives acknowledge the original PI who acquired the IUE data. In addition, the IUE Project asks the investigators acknowledge the use of the Regional Data Analysis Facilities and/or the National Space Science Data Center as appropriate.

11. Remote Observing

The University of Colorado and the University of Chicago currently support equipment which enables remote observing with IUE. The efficiency of observing in this mode may vary considerabley depending upon the type of program and the experience of the observer. Unlike observing equipment at GSFC, the current remote mode does not yet have redundant equipment. The GO is expected to operate the remote observing equipment at the site during the shift. Certain restrictions apply. Advance approval and additional pre-observing planning is required. Interested GOs may contact any IUE Resident Astronomer for details and guidelines.

12. Service Observing

In special cases, experienced GOs may not need to be present to perform routine observations requiring no real-time science decisions. Requests along with all required information for evaluation must be received at least 30 days prior to the scheduled shift. GOs will be informed of the results of the review at least a week prior to the shift. GOs are encouraged to submit their requests at the beginning of the episode. Accepted programs may be required to provide observing scenarios for high and low radiation and/or for cool and hot OBC conditions. For more details consult the enclosed Service Observing Guidelines.

13. Targets of Opportunity

Novae, supernovae, cataclysmic variables, and like objects will be observed either by staff astronomers or GOs with approved target-of-opportunity programs, as approved by the Project Scientist. PIs with approved target-of-opportunity programs should contact the Project Scientist to activate the program when suitable observering opportunities arise (IUE User Guidelines 1979; also NASA IUE Newsletter No. 5, pp. 15-16, 1979.)

14. Using the LWR Camera

There are currently no restrictions on use of the LWR camera. However, due to the flare in the Ultraviolet Converter (UVC), the LWR is configured to the reduced UVC voltage of 4.5 kv. This reduces the sensitivity of the camera by a factor of 1.37 from its original configuration. The extra overhead required to turn the camera on and off must be absorbed by the observer's program. (See also NASA IUE Newsletter No. 28, pp. 7, 10, and 22, 1985). Calibration exposures are still routinely performed on the LWR camera, but at a reduced rate compared to the prime LWP camera.

IUE Large Overexposure Policy
(October 1987)

The Three Agencies have adopted a new policy which limits the frequency with which large overexposures of the IUE cameras may be performed. As Guest Observers continue to push the capabilities of the IUE instrumentation, use of both very long exposures and heavy overexposures has increased in recent years. Since residual phosphorescence is known to contaminate long exposures taken as much as one week after a heavy overexposure, the Project finds it necessary to limit the degree and number of overexposures of the IUE cameras. The new policy is detailed below.

A "heavy overexposure" is defined to be a cumulative overexposure of 100 times or greater on one camera within an eight-hour period. For example, five spectra, each 20 times overexposed, would qualify as a heavy overexposure.

No overexposure of 1000 times or greater is permitted due to the potential for permanent damage to the cameras.

No more than 12 eight-hour periods containing a heavy overexposure are permitted per camera in any 12-month period (8 shifts for GSFC , 4 for VILSPA).

There are no restrictions or special requirements for shifts where the cumulative overexposure is less than 50X per camera.

Goddard and Vilspa are coordinating the scheduled dates of all shifts where cumulative overexposures of 50X or greater are planned, even though there are no limitations on the number of shifts where the cumulative overexposure is less than 100X. Consequently, any program planning cumulative overexposures of 50X or more must notify the Observatory in writing of these requirements. In order to be properly scheduled, this information should be communicated to the Observatory by the deadline established for other scheduling requests. Programs requiring heavy overexposures, as defined above, will be reviewed by the Project on a case-by-case basis for scientific justification and potential impact on other programs. The potential for severe impact will be taken into account when scheduling requests are evaluated.

The overexposure level of a given image is the ratio of the exposure time to that required for an optimum exposure (about 210 DN maximum). If the optimum exposure time for a given object cannot be reliably estimated from previous IUE or other satellite UV flux measurements, test exposures may be required. Overexposure estimates based on overexposure levels recorded on observing scripts and in the Merged Log may be inaccurate and should not be used for this purpose.

Scheduling and detailed exposure information for approved programs planning such overexposures will be exchanged between Goddard and Vilspa, so that the impact of overexposures on subsequent observations can be minimized by appropriate scheduling

Revised Power Positive and "Hot OBC" Beta Limts
(May 1988)

The monthly Beta angle regions where normal IUE operations may be restricted by a hot On-Board Computer (OBC) were increased during the tenth episode. These changes reflect a more accurate determination of the size of the zone within which the OBC temperature will exceed its maximum permitted operating temperature (54.6 degrees C). The IUE Operations Control Center spacecraft analysts collected new OBC temperature data during normal operations over a two-year period to arrive at these limits. These data showed that the OBC temperature reaches values higher than the permitted maximum at Beta angles up to several degrees higher than the previous zone's upper limits. The revised "hot OBC" Beta limits are given below. Note that the revisions affect only the upper monthly limits. There are normally no observing restrictions related to OBC temperature during May, June, July, and August. However, observations which are conducted in the region of Beta 75 for over 16 hours may require cooling the OBC even in the non-restricted months. This typically happens several times a year.

The Beta angles at which IUE may operate with sufficient power have changed with time, due to a slow degradation in the output of the solar arrays. Normally IUE observations must be performed at power positive attitudes. Certain time-critical observations or observations of a special nature (e.g. observations of comets within 60 degrees of the sun) may require discharge of the batteries. To assist in planning science observations, the power positive Beta region as predicted by the spacecraft analysts is given below on a month-by-month basis for the eleventh episode. These limits are for either short exposures or light duty observations where a single camera is exposing. If heavy extended use of the Science Instrument is planned, the Beta limits should be decreased by an additional 2 to 3 degrees.

Programs are normally scheduled when the majority of targets are available at "cool" OBC and power positive Betas. To insure that these conditions are met for a specific target or targets, you should communicate your request to the scheduler at the beginning of the episode. Note that observations which will discharge the batteries must be approved in advance by the IUE Project (see the Battery Discharge Policy)

Any questions concerning these changes or other scheduling and operational matters should be addressed to the Resident Astronomers at (301) 286-7537.

Monthly OBC Temperature and Power Positive Beta Limits

Month	OBC Hot Beta Zone		Spacecraft Power Positive Zone	
	Lower Beta Limit	Upper Beta Limit	Lower Beta Limit	Upper Beta Limit
June	—	—	31.0	110.0
July	—	—	32.0	110.0
August	—	—	32.0	110.0
September	70.0	90.0	32.0	110.0
October	65.0	95.0	31.0	110.0
November	60.0	100.0	31.0	110.0
December	55.0	105.0	31.0	111.0
January	55.0	105.0	31.0	111.0
February	55.0	100.0	32.0	110.0
March	60.0	100.0	32.0	109.0
April	65.0	95.0	33.0	109.0
May	—	—	34.0	108.0

IUE Battery Use
(May 1988)

The primary function of IUE's two batteries is to provide spacecraft power during the semi-annual earth shadow seasons. The batteries may also be used on a limited basis to supplement the power generated by the solar arrays in order to perform special observations, such as time-critical observations, comets at small Sun angles, or targets of opportunity, at high and low beta angles. The slow degradation of the solar array output, currently a few percent per year, has meant that there is an increasing demand for use of the batteries to support Guest Observer observations as the power positive beta region has decreased in size. On the other hand, the batteries have shown some degradation in performance. Battery No. 1, in particular, does not appear to hold a full charge for extended periods of time.

In the last few years, changes have been made in the rules which govern the use of the batteries in response to the results of the continuing studies of their performance and the battery health maintenance program. Currently the following procedures are in effect:

o The batteries must be "topped off", i.e. fully recharged, at least once a week. This is generally done during a long exposure so that there is no impact to the science observations.

o The batteries must be "topped off" prior to each expected battery discharge.

o Up to 36 battery discharges, where a voltage of 22.5 volts or less is reached on either battery, are permitted in any 12 month period. Of these, 24 are allocated to GSFC and 12 to Vilspa. These allocations do not include shadow season.

o Of the 36 battery discharges, up to 12 may involve battery discharge to the "red line" value of 20.6 volts. Of these, 8 are allocated to GSFC and 4 to Vilspa. At present, the "red line" value is reached in 4 to 6 hours of power negative operations.

o After the battery discharge, the batteries must be fully recharged. Some "dump current" is required during the recharging process, which means that the recharge must be done at betas of roughly 45 to 95 degrees. This rule is in effect for all battery discharges, whether for GO observations or during shadow season. The recharge period generally requires about twice as long as the discharge period, so 8 to 12 hours may be required.

Any battery discharge has significant effects on the Guest Observer observations that are performed for up to 12 hours afterwards, primarily due to the recharging requirements. It is therefore essential that battery discharges be planned and including in the scheduling process. Guest Observers who wish to discharge the batteries during the eleventh episode should request approval of the IUE Project by June 30. It may not be possible to accomodate requests received after this date.

IUE Guest Observer Badges and Car Passes

Access to the Goddard Space Flight Center is by badge and car pass. Each Guest Observer (GO) or RDAF visitor must have in his or her possession an IUE badge or temporary GSFC visitor's badge. IUE badges are non-transferable and can only be issued to GOs officially listed as Principal Investigators, Lead Investigators, or Co-Investigators on approved programs. All other GOs and visitors must be issued temporary badges on a visit-by-visit basis. Note that it is a PI's perogative to add Co-Investigators to a program at any time via a letter to the IUE Project Scientist. Please note also that the special IUE badges are to be used for IUE-related visits only. Visits to GSFC for other purposes require the use of other GSFC badges.

For the coming episode the Project will again issue badges and car passes automatically to PIs, Lead-Is, and Co-Is who our records show have not received these items previously. We will purposefully exclude only those non-US Co-Is who are part of large collaborative efforts having US PIs and whose travel to GSFC on IUE business is considered unlikely. Nevertheless, omissions may occur. We are permitted to request the special IUE badges only once a year. Thus anyone who has not received an IUE badge at the beginning of the episode will need to request a temporary GSFC badge each time that he or she visits GSFC. You, the PI, are responsible for ensuring that all persons travelling to GSFC in connection with your program have the proper credentials.

Requests for temporary GSFC badges and car passes should be received by the Operations Scientist at least two weeks prior to a visit. Requests must provide us with the name of the person, his/her institutional affiliation, the name of the country where he/she is a citizen, and the dates for the visit. Badges and car passes prepared on request are held for pickup at the GSFC main gate.

IUE Observatory
Code 684.9
Goddard Space Flight Center
Greenbelt, Maryland 20771

IUE Service Observing Policy
(Revision 4 - 18 May 1988)

The IUE Project believes that much of the success of IUE can be attributed to the presence of the Guest Observer at the Telecope Operations Control Center. Unlike other space experiments, IUE encourages observers to direct their scientific programs in real-time, allowing them to decide what course their observations take and giving them some control over the quality of data obtained. Furthermore, observers who are present during their observations become better informed about the limitations of the data and understand more about changes in instrumental performance and image processing capabilities.

The Project also recognizes that in some cases the Guest Observer need not be present for all observations and provides an optional Service Observing mode in which routine observing programs can be carried out by the Observatory staff. In this mode, the observer must create plans in greater detail and with few options because the observations themselves are performed by the Telescope Operator. The intent is not to have the Resident Astronomer act as a substitute Guest Observer, but rather to have the observations carried out per the Guest Observer's written instructions. The service observing guidelines contained in this document are designed to maintain a high quality of scientific results from the IUE. Please note that some requirements for service observing have been relaxed.

Requests will be honored only from the Principal Investigator or his/her officially designated representative (such as the Lead Investigator) who has been identified on an Assignment of Responsibility form. Throughout we use the term Guest Observer (GO) to refer to this person.

1.0 Definition of Mode

Service Observing will be optional for routine programs for which no real-time scientific judgement is necessary. A clear written observing scenario must be provided which includes a chronological order of targets to be acquired, type of acquistion (e.g. blind offset or standard), camera, dispersion, exposure times, and radiation cutoff level at which to halt the program or specific exposures. If requested, the GO must provide alternate scenarios for high/low radiation conditions and/or hot/cool OBC. The observations will be carried out by the Telescope Operator (TO). No decisions other than the usual operational ones will be made by the RA. Any unanticipated but necessary modifications to the observing plan will be made by the GO in telephone communication with the RA. Planning for such shifts, with input from the Resident Astronomer (RA) concerning spacecraft constraints, must be completed well in advance of the scheduled shift. All scripts, finder charts, and any other necessary documentation must be available prior to the scheduled shift. The GO must be reachable by phone during the scheduled hours of the shift.

2.0 Qualifying Programs

2.1 Only GOs with moderate to extensive real-time observing experience, including at least two shifts in the last two-years, will be eligible for this mode.

2.2 GOs may elect to use Service Observing for qualifying programs to the extent that observing runs on IUE programs will still bring them to Goddard at least once during the episode.

2.3 Local observers from the Washington-Baltimore metropolitan area are normally expected to observe from Goddard. Exceptions for extenuating circumstances must have the concurrence of the Project Scientist.

2.4 Targets must be uniquely identifiable within an area of 15 arc minutes radius either by virtue of its brightness or of the existence of an easily recognizable stellar pattern.

2.5 Types of Observations which can be performed:

2.5.1 Blind offsets can be done for targets which: (a) have been previously observed with IUE; (b) have an offset star with known 1950 coordinates within 15-20 arc minutes of the target; (c) have a guide star with a known position (FES or equatorial coordinates); and (d) have no need to obtain FES confirmation of the target's location.

2.5.2 No moving targets will be observed.

2.5.3 No observations will be done where the exposure must start at a specific time.

2.6.4 Targets in regions where the length of stay is conditional because of battery discharge constraints will not be observed.

2.6.5 Trailed spectra and multiple exposures can be taken in the large aperture, but not if time-resolution or spatial information is required.

2.6.6 Targets will not be observed if the GO has doubt before the shift concerning the approximate exposure lengths. The staff will not modify exposure from real-time information such as visual magnitude or the results of previous exposures.

2.6.7 Exposures can be terminated at a pre-defined "trigger" radiation level reading, but branching during the shift to alternate targets depending on radiation levels is not allowed. Either a low or high radiation observing sequence must be selected at the beginning of the shift.

2.6.8 Observations at a "hot OBC" Beta are permitted only if there is a single alternative observing plan, involving only one decision-making point.

2.7 GOs will be expected to conduct timely quick-look or final product evaluation of the scientific quality of data obtained in the Service Observing mode. Thus generally no more than 2-3 consecutive service observing shifts will be scheduled in a single observing run.

3.0 Planning the Service Observing Shift

3.1 A detailed written observing plan should accompany the initial request for Service Observing and must be received by the Observatory at least 30 days prior to the scheduled shift for GOs electing to use this mode. The plan will be used by a Resident Astronomer to determine the feasibility of the program for Service Observing. GOs who anticipate that they will request Service Observing are encouraged to submit their requests at the beginning of the episode. With sufficient lead time, shifts can sometimes be scheduled to avoid spacecraft constraints which would otherwise disqualify the program for Service Observing.

3.2 The detailed written observing plan should include the following:

3.2.1 A chronological listing of targets to be observed.

3.2.2 For each target, the target name, target's 1950.0 coordinates, exposure time, camera, and dispersion should be listed.

3.2.3 Additional information should be listed when required. For example, for qualifying blind offset observations, the name of the offset star, its 1950.0 coordinates, and visual magnitude should be listed. For the guide star, its 1950.0 coordinates and visual magnitude should be included. Alternately, its FES X and Y position, the FES counts and mode (i.e. whether fast track or slow track and underlap or overlap), the aperture used for the observation, and the spacecraft roll angle should be listed. This can be obtained from a previous observing script. (Note that this information may not be available on observing scripts that date from the first year or two after launch.)

3.2.4 A radiation trigger level should be included which specifies at which point the observation is to be halted. This may be either a single flux particle monitor (FPM) value for the entire program or values for each target. This should be done regardless of whether a US1 or US2 shift is planned. For US2 shifts where exposure times exceed 10-15 minutes, the GO should normally provide two scenarios; one for a high radiation shift and a second for a low radiation shift. At the beginning of the shift, the RA will inform the GO of the current status of the radiation and ask the GO to select which scenario to use for the shift.

3.2.5 During the winter months, there is a wide zone during which the OBC may reach its maximum permitted temperature and require cooling. At this point the observer has two basic options: 1) to go to a very low Beta and cool the spacecraft quickly (i.e normally between 60 and 90 minutes are required) and return to a target in the heating zone; or 2) to slew to a different target outside of the heating Beta range. If the observing shift is to occur during OBC heating months and the targets to be observed are in the OBC heating Beta range, the GO should include an alternate observing scenario to be used should the OBC reach redline limit during the shift. The scenario should take one of two forms. It should either be a list of cool Beta range targets to observe during the remainder of the shift or a list of priority heating Beta targets to be obtained after first cooling the OBC at a low Beta.

3.2.6 Earth and/or moon occultation should be checked for each target and noted when it occurs during the scheduled shift (i.e 1st half, middle, 2nd half). The observing scenarios should be designed so that targets occulted during the second half of the shift are observed during the first half of the shift and visa versa. However, occasionally time losses to observing programs occur or the program may be behind schedule because of time required to cool the OBC. If a target is occulted at the point in time at which it is to be observed in the observing scenario, the observation will be skipped.

3.3 An evaluation of the feasibility and completeness of the plan and recommendations as to any other requirements needed to qualify for Service Observing are given to the Project Scientist who approves or disapproves the request. Approval may be made contingent upon revisions being made to the plan. The evaluation is normally performed by the Resident Astronomer who will be on-duty during the scheduled shift.

3.4 The evaluation will normally be completed and the GO contacted at least 7 days prior to the scheduled shift. If the request is disapproved, the GO will need to make travel arrangements to observe in person at GSFC. (The GO is encouraged to make the request well in advance of the 30 day deadline to allow for more than 7 days notification.)

3.5 Once approved, completed scripts and finding charts should be mailed immediately to the Observatory and addressed to the Resident Astronomers, IUE Observatory Code 684.9,

Building 21 Rm. 61B, Goddard Space Flight Center, Greenbelt, MD 20771. Express Mail users must include both the code, building, and room number to insure delivery to the observatory. Express Mail delivered on either weekends or holidays can be diverted into the general GSFC mail system, so delivery on weekdays is preferred. (Note that blank observing scripts can be requested on the service observing form.) If regular mail is used, it is essential that the code be included for prompt delivery.

3.6 The GO must provide appropriate finder charts for program targets and offset stars fainter than visual magnitude 5.0 or for fields containing more than one bright star. The charts should show stars down to at least 12th magnitude, have the target star clearly marked, have an arc minute scale, and indicate the north and east directions. Atlas maps such as Norton's, Becvar, or SAO are not acceptable. Copies of old FES fields from previous IUE observations are acceptable. Please indicate whether you wish the finding charts to be returned to you. Due to lack of space at the Observatory, finder charts and any unused observing scripts are normally discarded once the service shifts have been completed.

3.7 ALL OBSERVING SCENARIOS, SCRIPTS, FINDER CHARTS, ETC. MUST BE AVAILABLE TO THE ON-DUTY RESIDENT ASTRONOMER AT THE BEGINNING OF THE SERVICE OBSERVING SHIFT. IF FOR WHATEVER REASON THESE MATERIALS ARE NOT AVAILABLE, AN OBSERVATORY PROGRAM WILL BE ACTIVATED AND THE SERVICE OBSERVING WILL NOT BE DONE. TIME WILL STILL BE CHARGED TO THE GO'S PROGRAM AND THE PROJECT SCIENTIST INFORMED OF WHY THE SERVICE OBSERVING COULD NOT BE COMPLETED.

4.0 The Service Observing Shift

4.1 The GO must call the observatory approximately 30 minutes prior to the beginning of the Service Observing shift and check in with the on-duty RA. At this time he can select the proper observing scenario if required, and give a phone number at which he can be reached during the shift. At this time the RA can inform the GO of the current status of the spacecraft. The GO must be available and reachable by phone during the entire shift. **IF THE GO DOES NOT CONTACT THE OBSERVATORY AT THE BEGINNING OF THE SHIFT OR CANNOT BE CONTACTED WHEN NEEDED DURING THE SHIFT, THE SERVICE OBSERVING OBSERVATIONS WILL BE HALTED. IF AFTER A REASONABLE LENGTH OF TIME THE GO CAN STILL NOT BE CONTACTED, THE SERVICE OBSERVATIONS WILL BE CANCELLED AND ANOTHER OBSERVATORY PROGRAM WILL BE ACTIVATED. THE PROJECT SCIENTIST WILL BE INFORMED OF THE REASON FOR CURTAILMENT OF THE SERVICE OBSERVING SHIFT. THE TIME WILL STILL BE CHARGED TO THE SCHEDULED PROGRAM.**

4.2 The observations will be carried out by the TO by going through an ordered and numbered set of observing scripts.

4.3 The TO will identify targets by their FES magnitude if brighter than visual magnitude 5.0, and by a finding chart if fainter.

4.4 The responsibility for the observations remain with the GO. The observatory staff assumes no responsibility for errors in scientific judgements or in misinterpretation of the written instructions. However, the Observatary will report time losses to the program resulting from errors of execution or hardware/software problems to the Project Scientist as is done for normal shifts.

5.0 Requesting Service Observing

Guest Observers who wish to request service observing for their programs are asked to send the attached form along with other requested information to:

Dr. Yoji Kondo
IUE Project Scientist
Code 684
Goddard Space Flight Center
Greenbelt, MD 20771

For your convenience, a sample completed request form for a simple monitoring program is attached.

****

Application for Service Observing Mode

PI NAME_____ Program ID _____

Designated Observer if other than PI _____

Number of shifts alloted for this program _____

Number of shifts requested for Service Observing_____

Approximate last date GO observed at GSFC _____

Do you need blank scripts sent to you? YES _____ NO _____

Date(s) for which you are requesting service observing _____
(Note: If your shifts have not yet been scheduled, enter "TO BE SCHEDULED")

Phone number where you can be reached during the shift(s): _____

Please write a brief program description (attach detailed plans, scripts, and finder charts.)

I hereby acknowledge that I have read the IUE Service Observing Policies (Revision 4 - 18 May 1988) and have enclosed all necessary information required for the feasibility review of this request. Upon approval of this request, I will provide the Observatory with Scripts and Finding Charts in a timely fashion. I will contact the Observatory by phone at the beginning of the scheduled shift and will remain available by phone throughout the Service Observing shift. I also acknowledge that failure to follow these guidelines may result in the cancellation of the Service Observing Shift and the time still being charged to my program.

Signature _____ Date _____

A SAMPLE COMPLETED REQUEST FOR A SIMPLE MONITORING PROGRAM

Application for Service Observing Mode

PI NAME C. Campbell Program ID WWKCC

Designated Observer if other than PI None

Number of shifts alloted for this program 4

Number of shifts requested for Service Observing 3 US2

Approximate last date GO observed at GSFC May 1988

Do you need blank scripts sent to you? YES _____ NO X

Date(s) for which you are requesting service observing Aug 4, Nov 15, & TO BE SCHEDULED
(Note: If your shifts have not yet been scheduled, enter "TO BE SCHEDULED")

Phone number where you can be reached during the shift(s): (306) 555-8923

Please write a brief program description (attach detailed plans, scripts, and finder charts.)

This is a monitoring program for HD 39801. The target is at a cool OBC Beta for all requested shifts. The target is not occulted by the Earth during the requested US2 shifts. The program consists of mostly short exposures. The two 30 min SWP LO dispersion spectra, designed to bring out the Si II emission line, will be overexposed by a factor of 4 in the continuum. The 30 min LWP HI dispersion spectrum, designed to study the CII line, will be a factor of 5 times overexposed in emission. If the low radiation option is used, the 60 min LWP HI dispersion image will be 10 times overexposed in emission and will need an XSPREP before doing exposure No. 5. A high and low radiation scenario is enclosed. target is an isolated second magnitude star. The short exposures may be done on gyros. For the longer exposures guide star information is given. Sample SWP and LWP scripts are enclosed. If approved, I will forward remaining scripts. Any time remaining at the end of the shift is donated to observatory programs.

I hereby acknowledge that I have read the IUE Service Observing Policies (Revision 4 - 18 May 1988) and have enclosed all necessary information required for the feasibility review of this request. Upon approval of this request, I will provide the Observatory with Scripts and Finding Charts in a timely fashion. I will contact the Observatory by phone at the beginning of the scheduled shift and will remain available by phone throughout the Service Observing shift. I also acknowledge that failure to follow these guidelines may result in the cancellation of the Service Observing Shift and the time still being charged to my program.

Signature _____ Date _____

HD 39801 – Service Observing 1988-89 –Program WWKCC

RA = 6 h 03 m 10.0 s
DEC = +20 10' 36"

HIGH RADIATION BACKGROUND OPTION
(Projected peak radiation at beginning of shift > 1.8 Volts)

Above 2.5 volts, please cut back exposures 6, 7, and 8 to 10 minutes.

Exposure No.	Camera	Aperture	Dispersion	Exposure	Purpose
1	LWP	Large	HI	2 min	Mg II profile and flux
2	SWP	Large	LO	5 min	Si II 1800 flux
3	LWP	Large	HI	2 min	
4	SWP	Large	LO	5 min	
5	LWP	Large Small*	LO LO	4.6 sec 30 sec	Mg II flux + cont
6	SWP	Large	LO	30 min	O I flux; Note Si II 4 X over
7	LWP	Large	HI	30 min	For 2325 line of C II
8	SWP	Large	LO	30 min	Mg II profile and flux

Guide Star Information

From SWP 249876: Aperture: SWLA

FES Position: X = 757
Y = -100

Counts: 120 F/O

S/C Roll 149 , 24 , 33.8

NOTES to Table

* Be careful of reference point shift for small aperture if large aperture has been closed in last 24 hours.

HD 39801 – Service Observing 1988-89 –Program WWKCC

RA = 6 h 03 m 10.0 s
DEC = +20 10' 36"

LOW RADIATION BACKGROUND OPTION
(Projected peak radiation at the beginning of the shift ≤ 1.8 Volts)

Please halt or skip exposures 2 and 3 if the radiation exceeds 1.9 volts.

Exposure No.	Camera	Aperture	Dispersion	Exposure	Purpose
1	LWP	Large	HI	2 min 15 sec	Mg II profile and flux
2	SWP	Large	LO	50 min	To get O I flux; Note Si II will be 6 times overexposed at 1800
3	LWP	Large	HI	60 min*	Good wavelength scales for velocities
4	SWP	Large	LO	5 min	Si II 1800 line flux
5	LWP	Large Small**	LO LO	5.0 sec 35 sec	Mg II flux + cont
6	SWP	Large	HI	ALAP***	S, Si II near 1800

Guide Star Information

From SWP 249876: Aperture: SWLA

FES Position: X = 757
Y = -100

Counts: 120 F/O

S/C Roll 149 , 24 , 33.8

NOTES to Table

* The camera will be overexposed by 10 times in emission, please follow with RDXSPREP

** Be careful of reference point shift for small aperture if large aperture has been closed in last 24 hours.

*** Please expose as long as possible for the remaining time of the shift. The minimum useful exposure time is 40 minutes.

Information on this form will be available to all IUE Guest Observers

OBSERVER C. Campbell (Service)
OBJECT HD 39801
RA (1950) $6^h\ 03^m\ 10.^s0$
DEC (1950) $+20^\circ\ 10'\ 36''$

PROGRAM ID WWKCC
Date 4 Aug 1988
Target Serial No. 1

mV 2.0 Sp. T. M3 III
E(B-V) _____ Class No. 49 (B-V) 2.0

Camera	LWP / LWR	(SWP)	
PREP	(Standard)	Overexposed	Other
Dispersion Mode	High	(Low)	
Large Aperture	Close	(Open)	
Object Aperture	Small	(Large)	
EXPO Time	50 min	_____ sec	Trailed
			Multiple

READ (Normal) Ping Avoidance Other
Over-exposure 6 X expected
Remarks:

PROCESSING SPECIFICATIONS
*** NO DEFAULTS ***

Processing Type:
- Point Source X
- Extended (lo disp) _____
- Trailed (lo disp) _____
- Full Aperture (hi disp) _____

Process Both Apertures _____

Registration:
- Automatic Shift X
- Manual Shift _____
- Do Not Shift _____

Remarks for IPC/DMC

RA/TO Observatory Record Number_____

FES Counts	Out	In	Overlap Fast	Underlap Slow
Tracking Mode	FES	X	Y	CT
	FES + GYRO			
	GYRO			S/C ROLL
Focus	Radiation	Beta		FSS Roll

EXPO Start UT Day_____ Hr_____Min_____Sec _____ THDA in EXPO_____

READ Start UT Day_____ Hr_____Min_____ LWR extended heater warmup/ LWP bad scan starts _____

Archive Tape_____ IMAGE SEQUENCE No. _____

EXPOSURE LEVELS Comments:

Emission _____DN, or_____X OVER
Continuum _____DN, or_____X OVER
Background_____DN, or_____X OVER
Noise _____DN, Y_____

Image Seq. No. _____ Program ID_____

Target Name _____ Day _____

GMT	FOCUS	FPM	THDA	ABG-P	ABG-Y	$\dot{P}$	$\dot{Y}$	TMP2	COUNTS

Information on this form will be available to all IUE Guest Observers

OBSERVER C. Campbell (Service)
OBJECT HD 39801
RA (1950) $6^h 03^m 10.^s 0$
DEC (1950) $+20° 10' 36$

PROGRAM ID WWKCC
Date 4 Aug 1988
Target Serial No. 1

mV 2.0 Sp. T. M3 III
E(B-V) _____ Class No. 49 (B-V) 2.0

Camera	(LWP) / LWR	SWP		
PREP	(Standard)	Overexposed	Other	
Dispersion Mode	High	(Low)		
Large Aperture	Close	(Open)		
Object Aperture	(Small)	(Large)		
EXPO Time	_____ min LWP 5.0 sec		Trailed	
	SWP 35 sec		Multiple	
READ	(Normal)	Ping Avoidance	Other	

Over-exposure 0 X expected
Remarks:

PROCESSING SPECIFICATIONS
*** NO DEFAULTS ***

Processing Type:
- Point Source X
- Extended (lo disp) _____
- Trailed (lo disp) _____
- Full Aperture (hi disp) _____

Process Both Apertures X

Registration:
- Automatic Shift X
- Manual Shift _____
- Do Not Shift _____

Remarks for IPC/DMC

RA/TO

Observatory Record Number_____

FES Counts	Out	In	Overlap Fast	Underlap Slow
Tracking Mode	FES	X	Y	CT
	FES + GYRO			
	GYRO			S/C ROLL
Focus	Radiation	Beta		FSS Roll

EXPO Start UT Day_____ Hr_____Min_____Sec _____ THDA in EXPO_____

READ Start UT Day_____ Hr_____Min_____ LWR extended heater warmup/ LWP bad scan starts _____

Archive Tape_____ IMAGE SEQUENCE No. _____

EXPOSURE LEVELS

Emission _____DN, or_____X OVER
Continuum _____DN, or_____X OVER
Background_____DN, or_____X OVER
Noise _____DN, Y_____

Comments:

Image Seq. No. _____ Program ID_____

Target Name _____ Day _____

GMT	FOCUS	FPM	THDA	ABG-P	ABG-Y	$\dot{P}$	$\dot{Y}$	TMP2	COUNTS