

**Request For Proposals  
for the  
NICI Planet Finding Campaign**

**Issued: 15 September 2005  
Proposals Due: 7 November 2005**

**1. Purpose of the Request for Proposal.** (a) Gemini is seeking to execute a dedicated planet search survey using the Gemini Near-Infrared Coronagraph (NICI) on Gemini South. Proposals are requested to help Gemini choose a team to execute a NICI planet search campaign.

(b) NICI is designed to detect faint companions around relatively bright stars. It uses an on-board 85-element curvature wavefront sensing Adaptive Optics (AO) system to concentrate the starlight, and a coronagraph to block as most of the starlight. NICI has two channels with separate Aladdin III detectors to simultaneously image in two adjacent narrow bands across the 1.6 micron methane feature. For more details on NICI, please see the information on the Gemini web pages: <http://www.gemini.edu/sciops/instruments/nici/niciIndex.html> .

(c) The campaign team will have up to approximately 50 nights of telescope time spread over two to three years to conduct the survey. No funding will be provided to the campaign team. The campaign team will be required to cover direct and indirect (e.g., travel and overhead) costs associated with executing the campaign. Gemini staff support for executing the observations and handling the data will be provided. Having campaign team members present at Gemini South for observing runs is strongly encouraged.

(d) Gemini wishes to have work begin on the campaign soon after NICI is delivered, during the instrument commissioning and testing phase, anticipated for the first quarter of 2006. This will allow the campaign team to develop observing techniques, characterize instrument performance, and test reduction software as soon as possible. Having campaign team members present at Gemini South for commissioning runs is strongly encouraged. Campaign observations are anticipated to begin during semester 2006A. Gemini will not be held financially liable for delays due to late delivery or failure of NICI to perform to specification after delivery. Once the campaign has started, the Gemini Director will review campaign progress twice a year after receiving the biannual report from the campaign team.

(e) The campaign team will need to provide their own data reduction software. Gemini will require that reduced data be ingested into and publicly distributed through the Gemini Science Archive.

(f) Gemini believes in using existing software and established techniques whenever possible in order to reduce campaign execution time and expense, to simplify operations, and to increase the chances of successful completion. The campaign team will be encouraged to work with Gemini staff to incorporate or take advantage of existing software where appropriate.

**2. Request For Proposal Documents.** (a) This Request For Proposal is accompanied by the Statement of Work that will be adopted in a Memorandum of Understanding to be signed by Gemini and the selected campaign team. The Statement of Work outlines the expected requirements of the campaign. The winning proposal will also be included as part of the Statement of Work. The Statement of Work will be used as the starting point for negotiations with the selected campaign team, and modifications are possible if issues are raised in the proposal.

(b) Those who submitted letters of interest will be notified when changes are made to the RFP or additional information is provided. Other information about NICI may be found on the public web pages at <http://www.gemini.edu/sciops/instruments/nici/niciIndex.html>. If the information in this RFP contradicts the information on the web pages, the RFP takes precedence.

**3. Submitting Proposals.** (a) All proposals must include all requested information.

(b) All proposals must be submitted electronically using the Gemini Phase I Tool (PIT). The PIT submission must include a proposed target list, detailed science case, description of the experiment (including data reduction strategies), total observing time requested, a full list of team members, relevant references and publications, and requested observing conditions. If the proposing team prefers, the main sections of the proposal (science case, technical description, and management section) may be formatted as separate text PDF attachment(s), including embedded figures, references, tables, charts, etc. The text parts of the PDF attachments do not need to be reproduced in the text windows of the PIT as long as the PDF is searchable for text strings (a Gemini Science Archive requirement). Alternatively, proposals may be entered in the PIT in the usual fashion with figures attached as JPEG, PS, or PDF files. Target coordinates and V-band optical magnitudes should be entered into the PIT target list even if a separate target list with additional information is provided in the science or technical section. Proposals do not need to specify ideal/impossible dates. Before submitting, select the button labeled “Demo Science or SV”; *do not* submit NICI campaign proposals to any other Gemini partner. At the present it is anticipated that NICI will require both AO guide stars and peripheral wavefront sensor (PWFS) guide stars for optimal performance, so please use the automatic guide star selection tool to find PWFS guide stars. Targets that do not have PWFS guide stars should not be excluded.

(c) Proposals should specify what proprietary period the team desires for campaign data. The proposal should include a plan for public data releases. The proprietary period will be different from that of other normal Gemini data sets, and is nominally expected to extend until 6 months after the last campaign observing run.

(d) The proposing team may choose to either keep targets on the target list confidential or to make them public (a combination of public and proprietary targets is possible). The International Time Allocation Committee (ITAC) would protect public targets from duplicate NICI observations by open-use proposals. A public target list would allow other teams to make complementary observations of campaign targets using other instruments. On the other hand, if

the target list is confidential, the national time allocation committees and the ITAC may allocate observing time to other teams to observe some campaign targets with NICI. In either case, access to the campaign data will be restricted to the campaign team for the entire proprietary period.

(e) The proposing team may choose how much time to apply for. The estimate of 50 nights is a guideline that is subject to scientific consideration and will be reviewed when NICI performance has been measured on the telescope.

(f) Proposals are required to include a management plan, specifying what resources the team can provide, what resources must be requested from other agencies or institutions, and what resources (if any) are requested from Gemini. Resources include data reduction software, computer hardware, student or Postdoc support, travel funds, public outreach, data from other facilities, and so forth. Management plans should include timelines, organizational charts with distribution of team activities, and methods for tracking progress and maintaining accountability.

(g) Until NICI is commissioned on the telescope, the estimated sensitivity and contrast ratio will be very uncertain. Modification to the proposed target list and observing strategy during and after NICI commissioning is very likely. Proposals should be flexible and suggest how the campaign could be modified if performance is significantly better or worse than predicted. AO performance as a function of observing conditions is also uncertain. Observations of targets fainter than  $V \sim 13$  may require better than median seeing conditions; brighter targets might take advantage of somewhat worse conditions. Proposals that can flexibly adapt to differences in AO performance and weather conditions will have a competitive advantage.

(h) The science justification, technical description, and management sections of proposals may be up to 20 pages total, including figures and diagrams. Target lists, references, and organizational charts will not be counted as part of the 20 pages. The PIT output will include the team membership, target coordinates, observing conditions, title and abstract, references, and so forth, which are not included in the 20 page limit. If the text sections are attached as PDF file(s), they should be formatted with reasonable one-inch margins and 11 point (or larger) fonts and be text searchable.

(i) All proposals must be received by Gemini before 6:00 p.m. Chilean Standard Time (UT-4) on 7 November 2005.

(j) A group of individuals or institutions may not submit a collaborative proposal where they are all listed as equal partners. The only way for a group of institutions or individuals to submit a proposal is for one Principal Investigator to submit a proposal with the other campaign team members listed as co-investigators. Proposals are submitted directly to the Gemini Observatory, not to individual Gemini partners.

**4. Communications and Questions.** (a) The contact person for questions or concerns regarding this procurement is:

Joseph Jensen, Instrument Program Scientist

Gemini Observatory  
Tel: 520-318-8436, email: jjensen@gemini.edu

Please do not contact any other person at Gemini regarding the campaign proposal process.

(b) General procedural questions can be handled by telephone. Technical or scientific questions must be submitted by email and must be received at least 5 working days before the due date for proposals. All questions and their answers may be provided to all interested parties.

**5. Basis For Campaign Team Selection.** (a) The NICI campaign can only be awarded to a lead institution located in one of the Gemini partner and host nations. The Gemini partners and hosts are Argentina, Australia, Brazil, Canada, Chile, Hawaii, the United Kingdom, and the United States. Proposals may include co-investigators from other nations provided the proposal specifies how Gemini data will be used outside the Gemini partnership.

(b) A Campaign Selection Committee formed by Gemini and including the ITAC and selected independent experts, and chaired by the Gemini Associate Director for Science Operations, will be responsible for evaluating proposals and recommending one or more proposals to the Gemini Director. The criteria for consideration will include (but not be limited to):

(1) Science case. How well the proposed science goals are developed from the top-level science goal of discovering planets around other stars and understanding their properties.

(2) Experimental Design. How well the technical campaign strategy would fulfill the science goals.

(3) Project Plan and Schedule. Whether the proposed schedule and task list for the campaign is realistic and complete.

(4) Budget and Management Systems. Whether the proposed systems for tracking resources, costs, and labor will be adequate. Whether the budget for the campaign is realistic given the scope the work. Since Gemini will not be providing funding for the campaign, it is up to the proposing team to determine what level of budgetary and management control is appropriate for their institutions.

(5) Use of Existing Techniques or Data. Whether existing software, astronomical data, observing strategies, and other information are used effectively.

(6) Modeling. Whether the team has adequately estimated planet properties, populations, and NICI performance to properly determine the likelihood of successfully detecting planets.

(7) Experience, Resources and Facilities. The extent of the team's experience with similar observations or data reductions, and whether the resources, personnel, and facilities available to the team are adequate.

(8) Flexibility. Whether the proposed target list and observing strategy are easily adapted if NICI performance is significantly better or worse than predicted. Whether the campaign can make use of a variety of observing conditions.

(9) Total observing time requested. Gemini expects to allocate approximately 50 nights to the NICI campaign, but proposing teams are encouraged to request the amount of time they anticipate needing to meet their scientific goals.

(10) Gemini partnership participation. The extent to which the team represents the interests and membership of the Gemini partnership.

(d) Evaluations may be made based upon information contained in the proposals, and, in the sole discretion of Gemini, information independently obtained by Gemini.

(e) Additional members may be added to the campaign team on the advice of the Campaign Selection Committee, the Science Working Group over the NICI campaign, or at the discretion of the Gemini Director. The PI and Campaign Manager must agree to the recommendation and approve the addition. Similarly, the PI may recommend adding members to the team subject to approval by the Gemini Director.

**6. NICI Performance.** (a) It is not yet known how well NICI, its AO system, and the telescope will work together. Measurements of instrument performance on the sky will not be available until after the campaign team has been selected. Furthermore, NICI performance is likely to improve during the course of the campaign. It is expected that NICI sensitivity to faint companions will be limited by super-speckles that result from non-common path errors between the two cameras, and these errors are unknown at present. Those submitting proposals should focus on forming a strong team and science case, and are discouraged from expending a great deal of effort estimating what contrast ratio NICI will achieve.

(b) Figure 1 below is provided as a reasonable estimate of the contrast ratio NICI will achieve, *and all proposing teams are required to use this estimate as a baseline*, even though it is quite uncertain. Proposing teams can then focus their attention on defining science objectives and selecting targets based on their understanding of the properties and populations of stars and planets rather than incomplete knowledge of NICI performance details. *The goal of the proposing team should be to convince the reviewers that their team can do the best science with NICI, given its assumed performance, and not that their team can guess what NICI's performance will be better than the competition.*

(c) Starting from the baseline estimate, proposing teams will need to estimate differences in sensitivity relative to the baseline due to changes in observing strategy (e.g., to accommodate different guide star brightnesses, different observing conditions or exposure times, using

different filters or coronagraphic mask configurations, etc.). Figures 2, 3, and 4 below show how NICI AO performance is expected to vary as a function of guide star brightness, wavelength, and natural seeing. *The proposal must make explicit the difference between the sensitivity estimate used and the baseline, to allow the Campaign Selection Committee to assess all the proposals. Sensitivity estimates not referenced to the baseline (ie, not using the relations in the figures below) will not be considered by the Selection Committee.*

(d) The baseline performance estimate assumes a contrast ratio of 13 mag at 1 arcsec radius from the star using differential imaging with 1% methane filters at 1.6  $\mu\text{m}$  and traditional hard-edged pupil and focal plane masks. The AO performance is assumed to yield a Strehl ratio of 0.3 at 1.6  $\mu\text{m}$  for guide stars brighter than  $V=13$  and  $r_0=20$  cm (approximately equivalent to a V-band seeing FWHM of 0.52 arcsec). The baseline coronagraphic mask has a radius of 0.32 arcsec. The pupil mask blocks 10% of the pupil, and the secondary spider pupil mask blocks approximately 10% more. A 50/50 beamsplitter divides the light evenly between the two science channels, and the total throughput (including detector, beamsplitter, pupil masks, and filter) is 19% for each channel. Baseline exposure times are 3 hours for a  $5\sigma$  detection for target stars brighter than  $H<10$  (for which the stellar halo dominates the sky background). For example, a  $V=7$ ,  $H=5$  target would yield a 3 hour,  $5\sigma$  detection of an  $H=18$  planet 1 arcsec from the target using the baseline configuration. Exposure times for target stars and planets with particular characteristics and separations can be scaled from the baseline using the information in the figures below. For sky-limited observations, a change in Strehl leads to the same factor change in signal, with effectively no change in background. For halo-limited observations, a change in Strehl will change the signal by the same factor, and also increase the background, which is proportional to  $(1-\text{Strehl})$ . For example, a reduction in Strehl from 0.3 to 0.2 would decrease the signal in both the star and the planet with a scale factor of 0.67 ( $0.2/0.3$ ), and increase the background by a factor of 1.14 ( $0.8/0.7$ ).

(e) NICI's sensitivity to point sources in the absence of a bright stellar halo can be estimated from the following baseline configuration parameters: the H-band zero point is  $9.6\times 10^6$  photons/s/nm/m<sup>2</sup>; the 1% H-band methane filters are 15.5 nm wide; 19% total throughput, including 90% pupil stop and spider mask; telescope aperture of 48 m<sup>2</sup>; pixel scale of 0.018 arcsec/pixel; and a typical H-band sky brightness of 14 mag/arcsec<sup>2</sup> (or 1.1 electrons per pixel per second detected). In a 3 hour observation at Strehl ratio of 0.3, a source with  $H=23.02$  is detected at  $5\sigma$  in an aperture of 25 pixels<sup>2</sup> (a circle of radius  $2\times\text{FWHM}$ ). Note that for G and K stars,  $(V-H)=1$  to 3 (and even redder for later stars). For stars with  $V<13$ ,  $H<10$ , a contrast ratio of 13 mag will mean that the limiting magnitude of  $H=23$  will not be reached and the observation will be dominated by the bright stellar halo within an arcsec of the star, not the sky brightness. Depending on the choice of star, its brightness at H, and the radial region of interest, it is likely that most NICI coronagraphic observations will be stellar halo rather than sky background limited. This won't be true for stars fainter than  $H=10$  or separations greater than 1 arcsec.

(f) Exposure times are "on-source", and proposing teams should assume 75% open-shutter observing efficiency while observing, and 15 min for acquiring the target, starting the AO, and configuring the instrument. Proposals should include additional time for standard star observations or other nighttime calibrations.

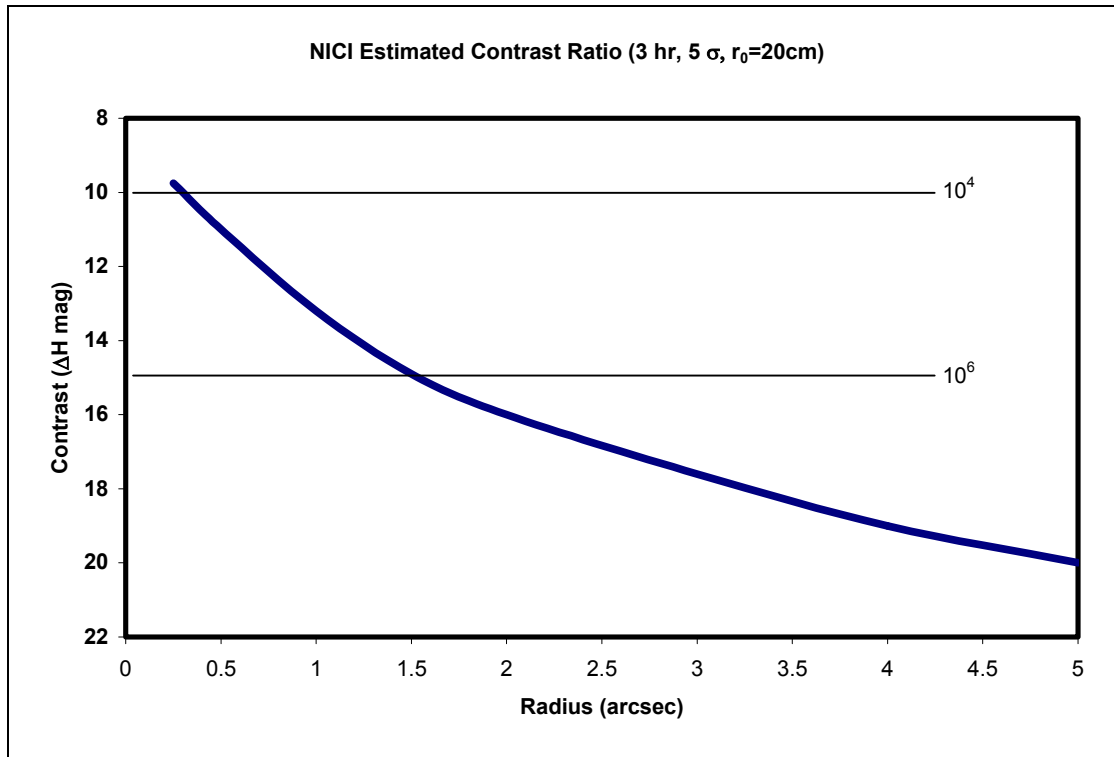


Figure 1. Contrast ratio estimated for NICI. The campaign strategy or target list may be modified when actual measured performance is available.

(g) It is expected that the baseline performance will be achieved for median or better seeing conditions. For observations targeting stars brighter than  $V=13$ , 70-percentile conditions should be selected in the PIT; better conditions may be requested for fainter targets. If NICI or the telescope fails to achieve the baseline AO performance during median and better conditions, Gemini will adjust the campaign scheduling to accommodate, and will work to improve performance to allow for more frequent campaign observing. The proposing teams do not need to worry about windshake, DM stroke, static telescope wavefront errors, etc. at the proposal phase. Reasonable estimates for the atmosphere and static telescope aberrations have been included in the baseline Strehl estimates already. These details will be measured and provided during NICI commissioning, and Gemini will work with the campaign team to make adjustments to the observing strategy as necessary. Weather losses should not be included in the estimated time requested, since the campaign time will be scheduled in a modified queue system in which weather losses are not charged against the program.

(h) NICI AO performance will depend on the properties of the deformable mirror, on the performance of the telescope mount and secondary tip-tilt system, on complex control systems, and on the weather. Proposals should take into account the variation in AO performance that is likely to occur due to changes in seeing, guide star brightness, wind, clouds, etc. *A successful*

*campaign will need some flexibility since the optimum performance will not be achieved every night.*

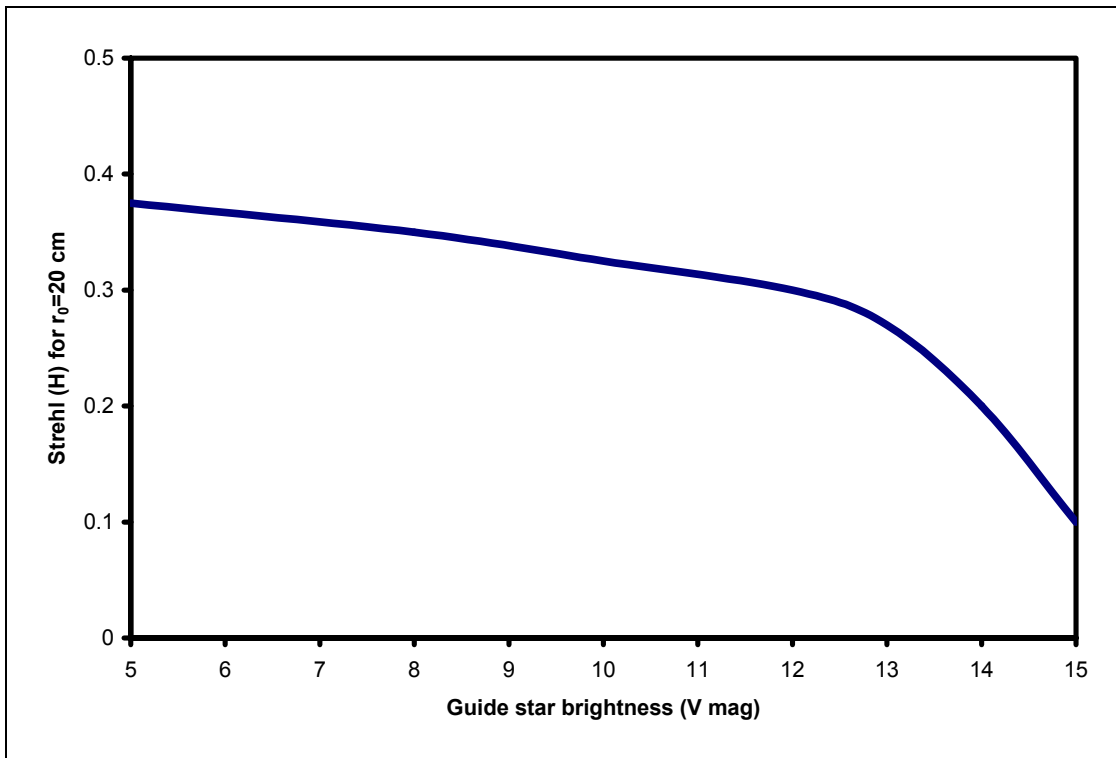


Figure 2. Predicted Strehl ratio as a function of guide star brightness. Proposing team will not need to worry about modifying the baseline unless target stars fainter than V~13 are chosen.



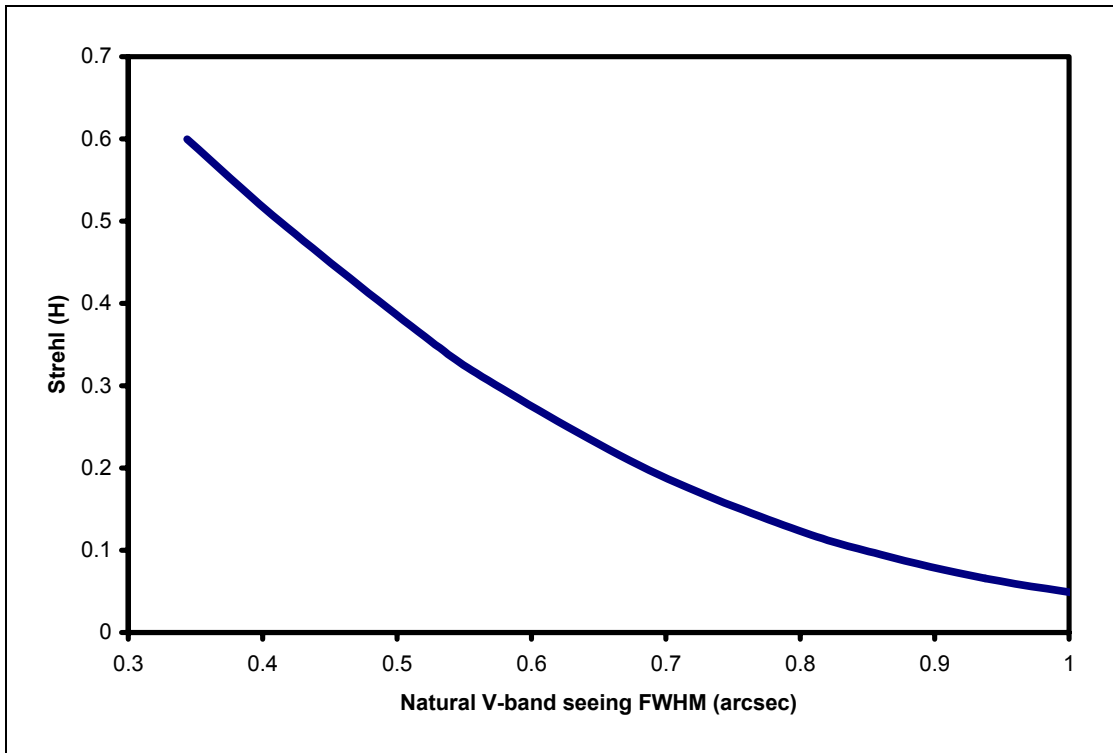


Figure 3. Predicted Strehl ratio as a function of natural seeing at V. It is anticipated that most NICI campaign observations will be done under median or better seeing conditions. Some flexibility in observing conditions is very desirable.

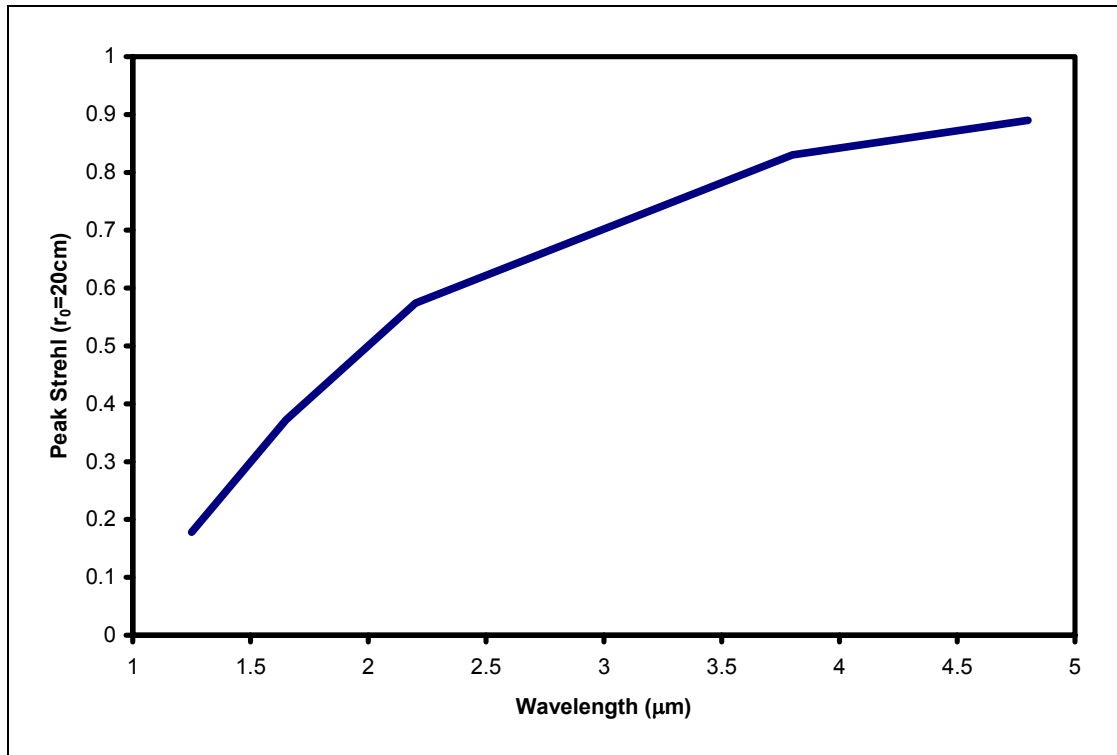


Figure 4. Peak Strehl ratio as a function of wavelength. The baseline sensitivity is for the 1.6  $\mu\text{m}$  methane filters, and this plot is only needed if other filters are proposed.

(i) Information about the instrument, filters, coronagraph, and AO system are available on the NICI web pages. Proposing teams are welcome to consider other filter bandpasses, coronagraph configurations, etc., but must clearly justify using items that have not been purchased or installed yet (since adopting these could introduce significant delays to the start of the campaign).

**6. Amendments and Supplements to RFP.** Amendments or supplements to this RFP will be made by means of a written amendment sent to each individual or group that submitted a Letter of Interest. They will also be posted to the public Gemini web pages.

**7. General.** The Gemini Observatory is operated by the Association of Universities for Research in Astronomy, Inc., under a cooperative agreement with the NSF on behalf of the Gemini partnership: the National Science Foundation (United States), the Particle Physics and Astronomy Research Council (United Kingdom), the National Research Council (Canada), CONICYT (Chile), the Australian Research Council (Australia), CNPq (Brazil), and CONICET (Argentina). NICI will be installed on the Gemini telescope located at the summit of Cerro Pachon in Chile ("Gemini South"). NICI was constructed using funds provided by the National Aeronautics and Space Administration (NASA).

THIS REQUEST FOR PROPOSAL is issued by the Gemini Observatory as of the date given first above.

**Request For Proposals  
for the  
NICI Planet Finding Campaign  
Addendum #1**

**Issued: 16 September 2005**

**Purpose of RFP Addendum #1.** Some of the tic marks in the figures in Section 6 of the RFP did not survive the translation from Excel to Word to PDF. To make the figures more legible and more useable, grid lines have been added. To further assist proposing teams, tabulated data for each plot are provided below.

**6. NICI Performance.**

Figure 1. Contrast ratio estimated for NICI. The campaign strategy or target list may be modified when actual measured performance is available.

radius (arcsec)	$\Delta H$ (mag)
0.25	9.75
0.50	11.0
1.00	13.2
1.50	14.9
2.00	16.0
3.00	17.6
4.00	19.0
5.00	20.0

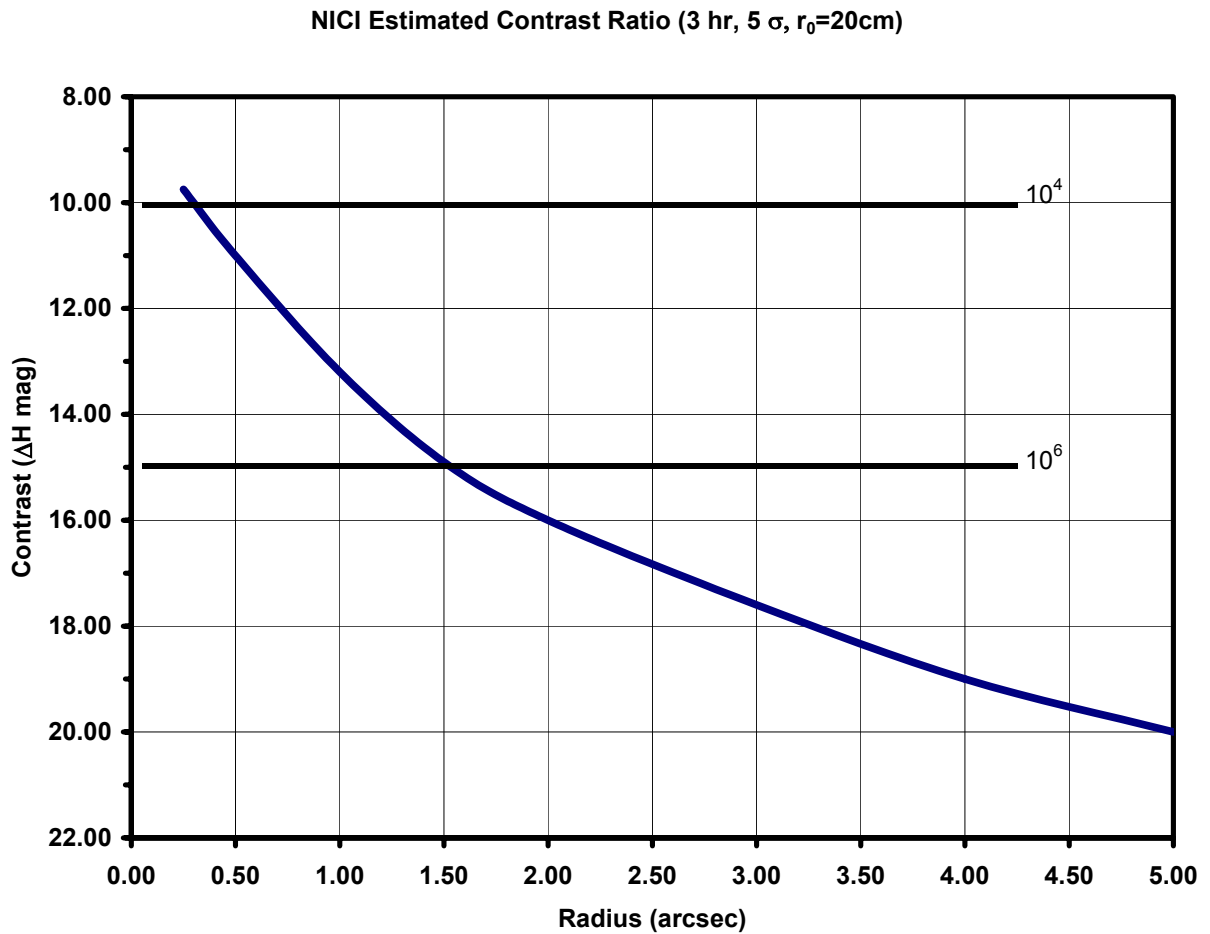


Figure 2. Predicted Strehl ratio as a function of guide star brightness. Proposing team will not need to worry about modifying the baseline unless target stars fainter than  $V \sim 13$  are chosen.

$M_v$	Strehl (H)
5	0.375
8	0.35
10	0.325
12	0.3
13	0.27
14	0.2
15	0.1

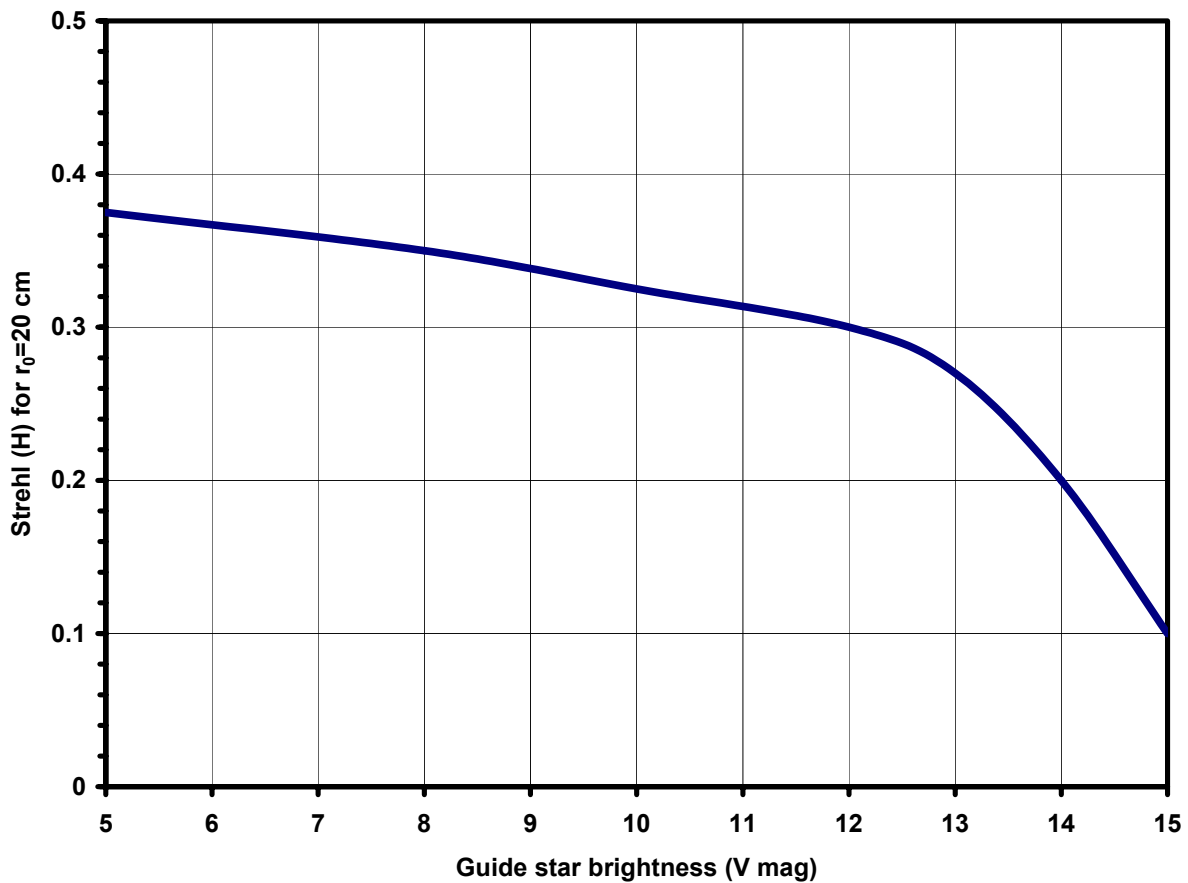


Figure 3. Predicted Strehl ratio as a function of natural seeing at V. It is anticipated that most NICI campaign observations will be done under median or better seeing conditions. Some flexibility in observing conditions is very desirable.

$r_0$ (cm)	V FWHM (arcsec)	Strehl (H)
0.3	0.34	0.60
0.25	0.41	0.50
0.2	0.52	0.37
0.18	0.57	0.30
0.15	0.69	0.20
0.13	0.79	0.13
0.12	0.86	0.09
0.11	0.94	0.07
0.1	1.03	0.04

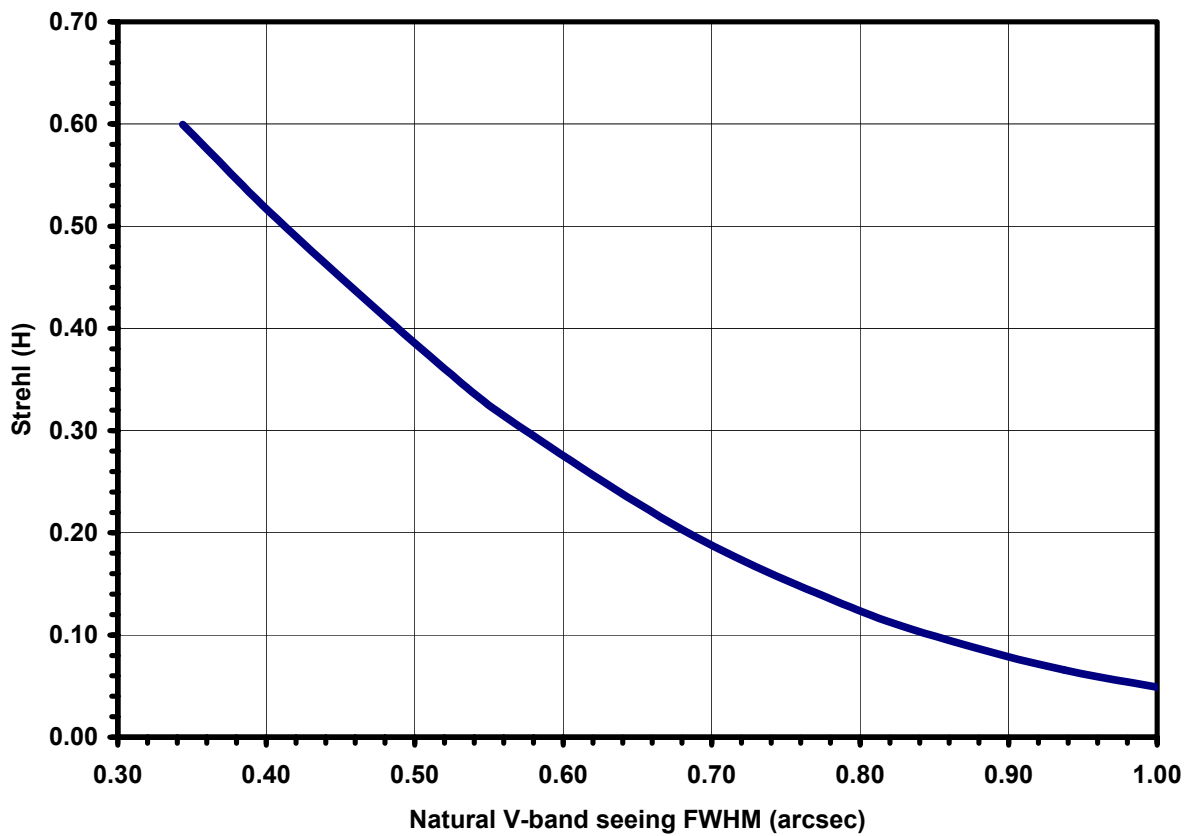
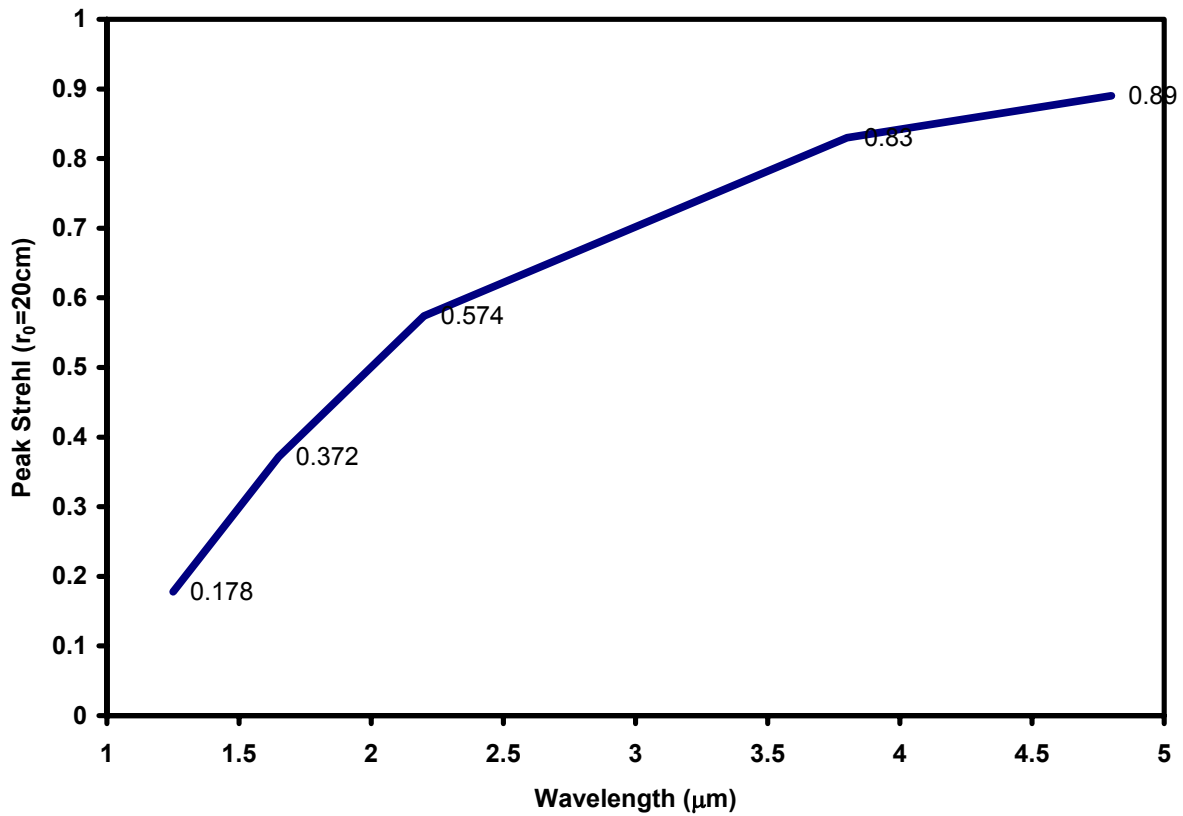


Figure 4. Peak Strehl ratio as a function of wavelength. The baseline sensitivity is for the 1.6  $\mu\text{m}$  methane filters, and this plot is only needed if other filters are proposed.

Wavelength ( $\mu\text{m}$ )	Strehl
1.25 (J)	0.178
1.65 (H)	0.372
2.2 (K)	0.574
3.8 (L)	0.83
4.8 (M)	0.89



**Request For Proposals  
for the  
NICI Planet Finding Campaign  
Addendum #2**

**Issued: 7 October 2005**

**Purpose of RFP Addendum #2.** Clarification on the policy for adding individuals to the winning NICI campaign team after the team has been selected.

We do not plan to automatically include anyone but the Gemini staff members assigned to support NICI, as described in the RFP. There may possibly be a very few others (and possibly none) added to the team later, if agreed by the PI and Gemini Director. The Gemini Board has not stipulated a requirement that all the partner countries be represented in the campaign team; nevertheless, we recognize the value of having a team that represents the partnership, and the ITAC will consider the composition of the team as one of the 10 criteria when making their recommendation. Teams are encouraged to be as representative of the Gemini partnership as practical, using the list of those that submitted Letters of Interest to help form collaborations when necessary. Gemini does not intend to combine teams to balance partner shares. We leave it up to the PIs of the proposing teams to form the teams that will be the most competitive.



**Request For Proposals  
for the  
NICI Planet Finding Campaign  
Addendum #3**

**Issued: 11 October 2005**

**Purpose of RFP Addendum #3.** Supplement to the NICI sensitivity estimates. The RFP specifies a baseline sensitivity and contrast ratio. Proposing teams may adjust the baseline performance for their proposals as described in the RFP. The following supplemental details may be helpful.

1. The baseline assumes an exposure time of 3 hours to achieve the stated contrast and S/N. Shorter or longer integration times may be considered, and proposing teams should assume that S/N scales as the square root of the exposure time.
2. The RFP specified a wavelength dependence for Strehl, but didn't include details necessary to estimate background sensitivity limits for filters other than the H-band 1% methane filters. Please note that the only high-performance filters designed for NICI that have been received are the H-band 1% methane filters. The broad-band filters are copies of those made for NIRC, and were not optimized for AO coronagraphic work. See the NICI and NIRC web pages for more information and filter profiles. There are a few other filters in NICI (broad and narrow-band) that are not listed below. Only the H-band methane filters can be used in the dual channel mode, which uses a 50/50 beamsplitter to separate the light for the two cameras. For all other filters, only a single channel may be used. Note that the throughputs for wavelengths other than H-band are very rough estimates, based on NIRC throughput measurements.

Band ( $\mu\text{m}$ )	Zero point ( $\text{ph/s/nm/m}^2$ )	Throughput	Backgrnd ( $\text{mag/asec}^2$ )	Emissivity	Filter width	Est. sky backgnd $\text{e}^-/\text{s/pixel}$
J (1.25)	$1.97 \times 10^7$	0.3 *	15.5		1.15–1.33	9.4
H (1.65)	$9.6 \times 10^6$ †	0.39 *	14.0		1.49–1.78	42
methane (1.65)	$9.6 \times 10^6$	0.19 per channel			15.5 nm	1.1
K (2.20)	$4.5 \times 10^6$	0.4 *	13.5		2.03–2.36	36
Lp (3.78)	$9.9 \times 10^5$	0.25 *	3.5	15% *	3.43–4.13	107265
Mp (4.68)	$5.1 \times 10^5$	0.25 *	0.3	15% *	4.55–4.79	361000

\* Single channel only.

† Note the error in the original RFP on the exponent sign in the zero point for H-band.

**Request For Proposals  
for the  
NICI Planet Finding Campaign  
Addendum #4**

**Issued: 15 October 2005**

**Purpose of RFP Addendum #4.** Answer various questions about NICI filters, coronagraphic masks, and WFS performance.

1. Teams are free to consider using alternative filters for the campaign. NICI filters are round, 29 mm in diameter, and 5 mm or less thick. Filters should have excellent ( $<10^{-4}$ ) out-of-band blocking from 0.5 to 5.6  $\mu\text{m}$ . Angle of incidence is 0 degrees, and the operating temperature is 65 K. Clear aperture is 24 mm in diameter.
2. The coronagraphic masks that will be delivered with the instrument are not apodized and not transmissive. Mask sizes are listed on the NICI web pages. Teams are free to consider using alternative coronagraphic mask designs. Coronagraphic focal plane masks are outside the dewar, and can be interchanged without warming and opening the dewar. Focal plane masks are made on calcium fluoride blanks 35 mm in diameter and 5 mm thick. Pupil masks are not apodized, and are located inside the dewar.
3. The baseline contrast ratio estimate includes the gains anticipated using the channel differencing technique.
4. The optical AO WFS uses avalanche photo diodes that are sensitive to a broad spectrum. The AO WFS comes after a dichroic that sends the optical photons to the AO WFS and the IR photons to the science camera. The dichroic transmission falls off beyond  $\sim 0.8 \mu\text{m}$ . Because the APDs are very sensitive, neutral density or narrow-band filters must be used for brighter targets (you do not need to specify this in your proposal—the observer will use the appropriate filters). The baseline performance is specified for guide stars of a particular V magnitude, but NICI does not use a V filter in the AO WFS. For most guide stars, the peak flux and APD response will be in the R band, and you may adopt the R magnitude instead of the V magnitude for estimating AO performance.

**Request For Proposals  
for the  
NICI Planet Finding Campaign  
Addendum #5**

**Issued: 28 October 2005**

**Purpose of RFP Addendum #5.** Funding for additional NICI filters or coronagraphic masks.

1. As stated in Addendum #4, teams are free to propose using alternative filters or masks for the campaign. The NICI construction budget includes money for a limited number of filters or masks beyond those that have already been purchased (two to six, depending on cost). If a successful campaign team wishes to purchase additional components using this money, they should specify in their proposal what the approximate cost is likely to be. Purchase will be subject to approval by the NICI construction management team. On the other hand, if teams have existing filters, grants, or other resources to purchase NICI components on their own, they should state this in their proposal. Such resources may offer a team a competitive advantage if they make the proposed campaign more scientifically competitive or efficient.

**Request For Proposals  
for the  
NICI Planet Finding Campaign  
Addendum #6**

**Issued: 1 November 2005**

**Purpose of RFP Addendum #6.** Clarification on sensitivity estimates.

1. The sensitivity estimates presented in the RFP assume that images from the two channels have been subtracted, suppressing speckles. No assumption about the source spectrum was used. The actual achieved contrast and sensitivity will depend on the spectrum of the source and the filters used. For single-channel observations (i.e., those using the other un-paired filters in NICI), you may assume a contrast approximately 3 mag lower than the baseline.

**Request For Proposals  
for the  
NICI Planet Finding Campaign  
Addendum #7**

**Issued: 2 November 2005**

**Purpose of RFP Addendum #7.** Clarification on page limits.

1. The page limit is 20 pages as described in the RFP. All the science and technical content should be included in the 20 pages (e.g., no technical appendices or other attachments). You may attach CV's for team members to satisfy the requirement that team members' expertise and relevant publications be included. CV's are not required, however, and you may use whatever format you wish to meet this requirement. The team experience and publications (or CV's) do not count against the 20 page limit.

**Request For Proposals  
for the  
NICI Planet Finding Campaign  
Addendum #8**

**Issued: 3 November 2005**

**Purpose of RFP Addendum #8.** Various questions answered.

1. CV's and other material that is not part of the main proposal can either be appended to a PDF attachment or included as a separate PDF attachment. Please try to limit the total number of attachments. Gemini staff will create a single file from the PIT output and any attachments for distribution to reviewers.
2. The only filters currently in NICI are those listed on the NICI web pages at <http://www.gemini.edu/sciops/instruments/nici/niciFilters.html> . Other filters listed in the OCDD or other documents have not been ordered.
3. The baseline sensitivity assumed  $r_0=20$  cm, which corresponds to V-band natural seeing of 0.52 arcsec FWHM. The RFP and addendum #1 specify how to adjust Strehl for variations in seeing or  $r_0$ . The Gemini queue (and the PIT) operate using IQ bins at 70% (0.8 arcsec or  $r_0=13$  cm) and 20% (0.45 arcsec or  $r_0=25$  cm). You may specify either bin in your PIT proposal, but the most important thing is to specify what seeing (V-band FWHM) you need for each target or group of targets. Gemini astronomers will work with the winning team to specify more precise observing conditions under which to execute the observations after testing NICI performance on the sky. For now, you may assume that the baseline estimate for  $r_0=20$  cm corresponds to (approximately) median IQ observing conditions.