POST GAMES REPORT

SALT LAKE CITY

8 February - 24 February 2002

IOC Medical Commission

In accordance with the Salt Lake 2002 Doping Control Guide, the IOC Medical Commission, in cooperation with SLOC Medical Services and the UCLA Olympic Analytical Laboratory is presenting this summary report based on the information provided by both Dr Douglas Rollins and Prof. Don Catlin.

During the Games, the doping control programme, headed by Douglas Rollins, M.D., Ph.D., managed the operations from SLOC headquarters. SLOC Chief Medical Officer, Charles Rich, M.D. was the formal liaison to the IOC MC.

During the Games, the anti-doping programme was supported by the following staff:

- Seven paid staff
- 390 volunteers composed of several positions with the following job descriptions :

- 50 Doping Control Officers: the person who processes the urine/blood specimens and completes the necessary paperwork (15 from USADA and 35 locally-trained);
- 30 Site Supervisors: the person in charge of the management of the doping control station, including staffing, assignment of radios/telephones, organization of the station, and checking in athletes;
- 25 Phlebotomists: the person in charge of the vein puncture for blood collection; and
- 195 persons for the following positions:
  - Escort Supervisor: the person responsible for assigning escorts to specific athletes and for assisting in the location of these athletes following the event;
  - Escort: the person who notifies and escorts the athlete following the event;
  - Technical Officer: the person who witnesses the passing of the urine specimen into the collection vessel; and
  - Couriers: persons who assisted the contract courier service to pick up specimens at each venue.

The Programme was divided into four phases:

1. A 100 % Initiative: Working with WADA, NOCs, IF and the national anti-doping agencies to ensure that all athletes were tested prior to attending the Olympic Winter Games of 2002 (OWG 02).

The purpose of this programme was to work with outside agencies to determine if all athletes coming to Salt Lake Games were tested for drug use prior to arriving in Salt Lake in February 2002. Working with WADA, NOCs, IF, and governmental anti-doping agencies, SLOC Doping Control began an effort to monitor athletes coming to Salt Lake. We requested testing information from WADA and NOCs about athletes that had been tested. It was difficult to monitor all athletes. NOCs provided information to SLOC doping control via a survey conducted in December 2001. Many NOCs tested all of their athletes before coming to Salt Lake. Some of this was done through WADA and some by governmental anti-doping agencies. In addition, WADA conducted approximately 1,200 tests during December 2001 and January 2002, prior to the Games. Overall, it was determined that approximately 95 % of athletes underwent doping control before coming to Salt Lake City.

From the opening of the village until the first competition, the IOC Medical Commission was involved in this programme to prevent duplication between this programme and the IOC programmes.

2 Pre-Competition Testing Programme: Testing randomly selected athletes prior to the beginning of their competition.

The Pre-Competition testing programme was modelled on the Out-of-Competition Programme used in Sydney. The name was changed from out-of-competition testing to pre-competition testing at the suggestion of WADA Secretary General. The purpose of the change was to avoid confusion between IOC testing with testing being conducted by WADA and other government anti-doping agencies.

The Pre-Competition programme was developed in three phases.

Phase I took place on October 29, 2001. At that time each National Olympic Committee (NOC) had submitted the estimated size of its respective teams. We planned to test approximately 4 % of all athletes coming to the Salt Lake Games. In Phase I, we selected numbers corresponding to 4 % of each NOC. For example, if an NOC had 100 athletes, four numbers (eg 7, 19, 38 and 90) were selected at random. NOCs that had less than 13 athletes were pooled together and 4 % of the pooled number were selected. The selection for Phase I was completed in the presence of representatives of the IOC Medical Commission, SLOC, the IOC Athletes' Commission and the NOCs. These numbers were kept by SLOC and the IOC in sealed envelopes.

Phase II took place on 28 and 29 January, 2002. This was the deadline for the NOCs to submit their final list of athlete names. A computerized list of athletes from each NOC was randomized and the randomized names were matched to the numbers drawn in Phase I.

Phase III took place after 29 January 2002 when the Olympic Village opened. During this Phase, athletes were located, notified of testing by representatives of SLOC doping control and a urine specimen was collected. The urine specimens were sent to the laboratory for analysis of anabolic steroids and masking agents.

Ninety Six athletes were tested in this programme. A complete list of athletes, sports, and NOCs for the Pre-Competition Programme is shown.

2. Blood Testing Programme: Testing for the use of erythropoietin (EPO) in all athletes participating in the endurance sports of cross country skiing, biathlon, Nordic combined, long track speed skating and short track speed skating.

All endurance athletes were screened by a blood test for elevated hemoglobin or reticulocytes. Those that were suspected of EPO use were required to return for a repeat screen on the day of their next competition. In addition, a maximum of 20 % of the field of athletes were to be screened on the day of each competition. Athletes with a suspicious blood screen were required to provide a urine specimen. The blood and urine were sent to the IOC laboratory for a more detailed blood screen (the same model as used in Sydney), and, if there was further suspicion, an analysis of the urine for EPO or related substances. The decision for a possible "no start" was to be made by each Federation and was out of the hands of the IOC or SLOC.

Initial blood screening occurred at Soldier Hollow (SHP), The Utah Olympic Oval (UOV) and the Salt Lake Ice Center (SLI). The equipment for analysis was chosen by the Federations. Skiing (FIS) and biathlon (IBU) chose equipment provided by the Sysmex company (a haemoglobin analyser and an instrument to determine the percent reticulocytes). Skating (ISU) chose the Advia instrument provided by the Bayer company. The ISU refused to pay for the use of the Advia instruments at UOV and SLI because they were not in agreement with the protocol and felt that the IOC/SLOC should pay. FIS paid for the relocation of its instrument. FIS and IBU paid for the persons to operate their instruments. The cost of transporting the IBU instrument from Europe to Salt Lake was paid by SLOC. Despite efforts to get IBU and FIS to share an instrument each brought their own and separate persons to operate them. This created a severe space problem as we had space for only one instrument at SHP. We managed to create two spaces, but working conditions were not ideal.

The Sysmex instrument sent to SHP from Austria by the IBU was damaged in shipment and could not be used. Thus, IBU and FIS had to share one instrument (despite not wanting to previously). About halfway through the Games the Sysmex instrument at SHP began malfunctioning and for several days, until a replacement arrived, there was no blood analyser at SHP to perform blood screening. On these days, blood samples were sent to the IOC laboratory in Salt Lake City where haemoglobin and percentage of reticulocytes were measured by an Advia instrument. The results were immediately sent back to SHP by FAX in time to collect a urine if necessary after the race.

Procedures were changed by the Federations and the IOC Medical Commission after the Games had started. The following changes were made to the blood testing protocol after the start of the Games:

- FIS and IBU changed the protocol so that only one whole blood tube was collected prior to an event. Haemoglobin and % reticulocytes were measured on that sample. If suspicious, the athlete was required to return to have more blood drawn after the race and to provide a urine specimen. The blood and urine specimens were sent to the IOC lab. **NOTE:** The laboratory insisted on 3 ml of whole blood and 10 ml of clotted blood for serum to perform the necessary analyses. This made it necessary to draw 16 ml of blood from those athletes who were to have blood and urine sent to the laboratory (3mL for on-site measurement and 13 ml to send to the laboratory).

- FIS required that an additional blood specimen be drawn for a "no start" decision. The average values of the two specimens were used to determine a "no start".

- The ISU did not want to draw blood from athletes on the day of a race. Consequently, 20 % of the field of athletes who raced on a given day had their blood drawn the day before. This worked reasonably well in that speed skating and short track speed skating athletes did not compete the day prior to their race.

- The ISU decision for a no start was based on its experience with the "SAFE" paradigm. It made no decisions in favour of a no-start during the Games.

The Blood Doping Control Stations at SHP, UOV, and SLI were separate from the Urine Doping Control Stations and they had separate staff. At the blood stations there was a Doping Control Officer, a Site Supervisor, and five to seven phlebotomists. Blood was tested for haemoglobin and % reticulocytes at each venue. Blood tubes (two 3 ml lavender top tubes for whole blood and one 10 ml multi-coloured top or red top tube) were purchased from Berlinger in the form of Mini-Bereg Kits. In some cases the lavender top tube was drawn before the race and the remainder of the blood drawn after the race if necessary. When it was required to send a blood and urine specimen to the IOC laboratory for EPO analysis it was sent in a Bereg Twin Kit. The blood tubes were placed into the blood portion of the Bereg Twin Kit and the urine was placed into the urine portion. Both blood and urine tubes had the same unique kit number.

The use of the Bereg Twin Kits and Mini-Kits for blood collection should be reviewed carefully. The kits holding the blood tubes were not very flexible and if a blood tube was used the entire kit had to discarded. Berlinger recommends that the blood tubes be placed in the top of the Bereg Twin Kit bottles. This resulted in the breakage of one blood tube and loss of the specimen.

There were 1,222 blood specimens drawn and analysed at these three sites. Of these specimens 133 (10.6%) had elevated reticulocytes and 8 (0.7) had elevated haemoglobin. The IOC laboratory received 77 combined blood and urine specimens for EPO analysis. The majority of blood specimens were drawn on 6, 7, 8, 9, and 10 February when all endurance athletes were initially tested.

4 In-Competition Testing Programme: Urine testing of the top four athletes (or a random selection from the respective team) in each medal event, plus one or two random athletes in those events. In the team event of ice hockey a random athlete was selected from each team for each preliminary game. In curling, one random athlete was selected from each preliminary round. Each IF signed a test protocol agreement that clearly outlined the doping control for each event

The samples were analysed at the UCLA Olympic Analytical Laboratory, temporarily located in Salt Lake City. This laboratory has IOC and ISO/IEC 17025-1999 accreditation , and is directed by Dr Don Catlin. More than 40 people worked at the laboratory which was operational 24 hours a day. A member of the IOC "Doping and Biochemistry" sub-commission and a WADA Independent Observer were at the laboratory at various times. In addition, blood specimens were also drawn and analysed at several venues under the direction of the IFs.

The summary of the all the tests done by the laboratory is listed in Table 1.

1. Tests performed in-competition (tables 2a – 2b)

A total of 598 tests were performed during the period from 9 to 24 February. This number of tests was determined by the IOC and SLOC, taking into account the laboratory handling capacity and the wishes of the IFs. However, 623 samples were collected. The discrepancy comes from the partial samples which were counted as one sampling.

The method for selecting the athletes to be tested was agreed on with each IF and led to the preparation of a protocol by SLOC which was signed by all the parties. This selection method was based on the methods used by each IF while respecting the IOC's principle of testing all medallists.
In the majority of cases, the medallists, the fourth place finisher, and athletes selected at random were tested.

The turn-around-time, which is the number of hours elapsed between receipt of the samples in the laboratory and faxing the report to the Chairman of the IOCMC and to the WADA Independent Observer, averaged 25.9 hours exclusive of the positive cases.

2. Out-of-competition tests (table 3)

Out-of-competition testing was conducted by various agencies including the IOC. The laboratory is not aware of the administrative details on these samples. In all, 102 urine tests were carried out. This testing began when the Olympic Village opened on 29 January 2002, and continued until 20 February 2002. The average turn-around-time for these samples was 23.8 hours.
Ninety-six athletes were selected for this programme. The total of 102 reflects some partial samples due to problems with Ph or SG.

3. EPO tests: urine plus blood (tables 4a – 4b)

It was agreed by the IOC, SLOC and the IFs that these tests would be focused more particularly on endurance sports. Table 4 summarises these tests.
Seventy-seven couples blood/urine were analysed by the laboratory.

4. Reticulocyte testing for the International Federations (table 5)

One of the Federations experienced difficulty with on-site blood testing and asked for the assistance of the UCLA laboratory. This testing is summarised in table 5.

5. Positive analytical results (tables 6a – 6b)

The Salt Lake laboratory Director communicated 22 positive results to the acting Chairman of the Medical Commission and to the Office of the Independent Observer. These results were:

- Six positive results leading to a hearing and a report to the IOC Executive Board
- Four positive results corresponding to blind tests
- Twelve positive screen results for salbutamol, the use of which was indicated in a declaration beforehand

It was decided not to follow up 17 results which the laboratory communicated to the Chairman of the Medical Commission and the Office of the Independent Observer for the reasons given in table 6b.

6. Blind urine tests (table 7)

This technique consists of preparing "positive" samples in advance, which are then included with the normal samples sent to the laboratory to be analysed. This technique is used to allow the IOC to state that the laboratory was performing the analyses properly. Four such samples were submitted to the laboratory and all were detected and reported. The A confirmation was not performed on one of the samples because the form received from SLOC indicated that the sample was an IOC blind sample.

1. Comments

6.1 By the laboratory

1) To summarize the testing methods and procedures worked very well. All the equipment performed satisfactorily. The method for detecting EPO and darbepoetin in urine performed flawlessly. The cooperation of the IOC was outstanding and most appreciated. The turn-around time for the negative samples was just under 24 hours, which to our knowledge has never been achieved before.

2) It was clear from the opening day that the sample-collection teams at the sites did not have sufficient training. This resulted in the necessity for the laboratory to spend hours trying to find and correct all the errors in the paper work. In the future, the IOC would be better served if the entire sequence of paper work were revised.

3) There were too many IOC blind samples. There is no real point in adding these samples in the modern world of doping control wherein all the procedures are highly controlled and the process is open to continual inspection and verification. In addition it was very easy for the laboratory to recognise the IOC samples, thus the point of the exercise was moot.

6.2 By SLOC

1) **Laboratory**. Identify a laboratory as early as possible. Acquire space and commitment from the laboratory director. Work with a laboratory director who will be a part of the doping control team and meet with them regularly. Consult with the laboratory director about urine and blood collection supplies and chain-of-custody forms.

2) **Volunteers.** Identify and train volunteers as early as possible. Use experienced Doping Control Officers (even if they must be paid). Do not train local people as DCOs in two or three years and expect them to be competent. Develop a sense that all of the volunteers are part of a large team; provide them with as many perks and benefits as possible. Do not count on the Organising Committee to take care of your volunteers. Doping Control volunteers must be specifically trained at least one year in advance and should work at their specific job assignment during the test events. The Doping Control Team should be venue-specific. This particularly refers to the Doping Control Officers, Site Supervisor, and Escort Supervisor. It is important for them to be knowledgeable about the Sport and Venue.

3) **International Federations.** During the test events work with the IFs. Know the key persons involved and develop strong relationships with them. Develop testing protocols with each Federation as early as possible. These protocols will be used to develop your in-competition test plan. Communicate frequently with key persons in each Federation.

4) **IOC/WADA.** Work closely with both of these organisations. Meet with them regularly to stay abreast of changes and to remain knowledgeable about potential changes in doping control protocols and procedures. This is particularly important with regard to blood testing. Wherever possible, obtain of procedures in writing.

6.3 By the IOC

The doping control programme in Salt Lake City went well in general. However, some points, not directly linked with the Salt Lake City programme, but which had consequences on this programme, should be revised in the future.

1) All the Doping Control Officers, responsible for a doping control station should be professional.

2) Procedures should be defined at least six months before the opening of the Village.

Table 1

Salt Lake City 2002 Olympic Games test summary

Samples in competition		598
Refer to tables 2a - 2b for test distribution		
Samples out of competition		102
Refer to table 3 for test distribution		
EPO tests (urine and blood)		77
Refer tables 4a – 4b for test distribution		
EPO tests (reticulocyte count for IF)		35
Refer table 5 for test distribution		
Duplicate samples - not tested (SG or pH issue)		9
IOC Blind samples		4
Refer table 7 for distribution		
TOTAL	=	**825**

Table 2a

Snowbasin	Downhill Men	6
	Combined downhill/Slalom Men	6
	Super G Men	6
	Downhill Women	6
	Comined downhill/Slalom Women	6
	Super G Women	6
	Total	**36**
Deer Valley	Moguls Men	7
	Aerials Men	7
	Slalom Men	6
	Moguls Women	6
	Aerials Women	6
	Slalom Women	6
	Total	**38**
Park City	Halfpipe Men	9
	Snowboard parallel Men	6
	Super giant slalom Men	7
	Halfpipe Women	6
	Snowboard parallel Women	6
	Super giant slalom Women	6
	Total	**40**
Soldier Hollow	Cross country Men	36
	Biathlon Men	23

	Nordic combined Men	15
	Cross country Women	49
	Biathlon Women	26
	Total	**149**
Utah Olympic Park	Bobsleigh Men	13
	Luge Men	5
	Luge double	5
	Skeleton Men	7
	Bobsleigh Women	7
	Luge Women	5
	Skeleton Women	9
	Ski jumping	18
	Total	**69**
	Ice hockey Men	51
E Center	Ice hockey Women	19
	Total	**70**
Peaks Ice Arena	Ice hockey Men	26
	Ice hockey Women	31
	Total	**57**
Salt Lake Ice Center	Figure skating	26
	Speed skating /short track Men	23
	Speed skating /short track Women	15
	Total	**64**
Utah Olympic Oval	Speed skating Men	35
	Speed skating Women	34

	Total	**69**
Ogden Ice Sheet	Curling Men	18
	Curling Women	13
	Total	**31**
	Total	**623**

TABLE 2b

In competition testing: Number of samples processed by day during Games

Date	2.9	##	##	##	##	##	##	##	##	##	##	##	##	##	##	##	Tot
Day	**2**	**3**	**4**	**5**	**6**	**7**	**8**	**9**	**10**	**11**	**12**	**13**	**14**	**15**	**16**	**17**	
Alpine Skiing		6		6	6	6		6	6			6	7	6	6		**61**
Biathlon			11		10			10		5		5					**41**
Bobsled									6		7				6		**19**
Cross-Country Skiing	13			13		6	6		6		12		5		4	6	**71**
Curling			3	1	2	2	2	4	3	2		4	3	3			**29**
Figure Skating			6			5				6			7				**24**
Freestyle Skiing	6			7						6	7						**26**
Ice Hockey	7	6	9	8	11	14	10	9	11	9	10	9	8	4	4	4	**133**
Luge			5		5		5										**15**
Nordic Combined		6							6					6			**18**
Short Track					4	1		9				10			15		**39**
Skeleton												13					**13**
Ski Jumping		9			7					6							**22**
Snowboarding		6	7				12										**25**
Speed Skating	6	5	5	6	5	5		5	5		5	5		5	5		**62**
Total	**32**	**38**	**46**	**41**	**50**	**39**	**35**	**43**	**43**	**34**	**41**	**52**	**30**	**24**	**40**	**10**	**598**

TABLE 3

Out of competition testing: Number of samples processed by day of Games

Date	##	##	2.1	2.2	2.3	2.4	2.5	2.6	2.7	2.8	2.9	##	##	##	##	##	##	##	Tot
Day	**-9**	**-8**	**-7**	**-6**	**-5**	**-4**	**-3**	**-2**	**-1**	**1**	**2**	**3**	**4**	**5**	**6**	**7**	**12**	**13**	
Alpine Skiing			1				2	1	3	1	1			3			1		**13**
Biathlon																			**0**
Bobsled			3	1				2	3					1					**10**
Cross-Country Skiing																			**0**
Curling								2	2										**4**
Figure Skating						1	1	1		1	2					1			**7**
Freestyle Skiing						1	1		1	2		2							**7**
Ice Hockey	2	4	3	1	1	7	1	2	2							3			**26**
Luge						1	2	1		2		2		2					**10**
Nordic Combined																			**0**
Short Track																			**0**
Skelton			1							1									**2**
Ski Jumping							2	4	2										**8**
Snowboarding							3	2		2									**7**
Speed Skating																			**0**
Unknown								1			2		1		2		1	1	**8**
Total	**2**	**4**	**8**	**2**	**1**	**10**	**12**	**16**	**13**	**9**	**5**	**4**	**1**	**6**	**2**	**4**	**2**	**1**	**102**

TABLE 4a

DATE		06 feb.	07 feb.	08 feb.	09 feb.	10 feb.	11 feb.	12 feb.	13 feb.	14 feb.	15 feb.	16 feb.	17 feb.	18 feb.	19 feb.	20 feb.	21 feb.	22 feb.	23 feb.	24 feb.	Total	%
VENUE																						
SOLDIER HOLLOW	BLOOD COLLECTIONS	80	201	143	104	14	21	26	20	16	14	25	27	14	18	10	23	8	17	12	793	
Cross Country, Biathlon	RETICULOCYTES ≥ 2.0%	4	9	2	8	1	2	3	0	0	2	5	3	1	0	0	3	0	2	1	46	5.8
Nordic Combined	ELEVATED HEMOGLOBIN	1	0	0	0	0	0	0	0	0	0	0	0	0	0	0	2	0	1	0	4	0.5
	URINE/BLOOD TO LAB	1	0	0	6	1	2	3	0	0	2	5	3	1	0	0	6	0	2	1	33	4.16
UTAH OLYMPIC OVAL	BLOOD COLLECTIONS	88	70	4	9	7	7	1	3	1	10	9	0	10	8	0	4	4	0	0	235	
Speed Skating	RETICULOCYTES ≥ 2.0%	13	6	0	2	1	1	0	1	0	1	0	0	3	1	0	1	1	0	0	31	13.2
	ELEVATED HEMOGLOBIN	0	1	0	1	0	0	0	0	0	0	0	0	1	0	0	1	0	0	0	4	1.7
	URINE/BLOOD TO LAB	0	1	0	2	1	1	0	1	0	1	0	0	3	1	0	1	1	0	0	13	5.53
SALT LAKE ICE CENTER	BLOOD COLLECTIONS					104	25	0	14	0	16	0	0	0	19	0	0	16	0	0	194	
Short Track Speed	RETICULOCYTES ≥ 2.0%					25	5	0	8	0	8	0	0	0	9	0	0	1	0	0	56	28.9
Skating	ELEVATED HEMOGLOBIN					0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0
	URINE/BLOOD TO					0	0	0	8	0	8	0	0	0	9	0	0	1	0	0	26	1

	LAB																					**3.4**
TOTAL	**BLOOD COLLECTIONS**																				**1222**	
	RETICULOCYTES ≥ 2.O%																				**133**	**10.9**
	ELEVATED HEMOGLOBIN																				**8**	**0.65**
	URINE/BLOOD TO LAB																				**72**	**5.89**

TABLE 4b

EPO Doping Control Out of Competition: number of combined blood and urine samples received

Date	2.6	2.7	2.8	2.9	2.1	2.11	2.12	2.13	2.14	2.15	2.16	2.17	2.18	2.19	2.20	2.21	2.22	2.23	2.24	Tot
Day	**-2**	**-1**	**1**	**2**	**3**	**4**	**5**	**6**	**7**	**8**	**9**	**10**	**11**	**12**	**13**	**14**	**15**	**16**	**17**	
Biathlon						3					5		1							9
Cross-Country Skiing	1			6			3			2		2				7		4	1	26
Nordic Combined					1							1								2
Short Track								8		8				9						25
Speed Skating		1		2	2			1		1			3	1		3	1			15
Total	**1**	**1**	**0**	**8**	**3**	**3**	**3**	**9**	**0**	**11**	**5**	**3**	**4**	**10**	**0**	**10**	**1**	**4**	**1**	**77**

TABLE 5

EPO Doping Control Out of Competition: number of blood samples received

from the Skiing and Biathlon Federations for the analysis of reticulocytes

Date	2.15	2.16	Total
Day	8	9	
Biathlon		20	**20**
Cross-Country Skiing	15		**15**
Nordic Combined			**0**
Short Track			**0**
Speed Skating			**0**
Total	**15**	**20**	**35**

TABLE 6a

Number of positive analytical results reported to the acting Chairman of the IOC Medical Commission and to Mr Howman (WADA)								
Drug Reported	B sample required	Alpine Skiing	Cross-Country	Curling	Ice Hockey	Speed Skating	Short Track	Synopsis
Clenbuterol	no							1 IOC sample
Stanozolol	no							1 IOC sample
Metenolone	no							1 IOC sample
Triamterene + Epitrenbolone	no							1 IOC sample
Nandrolone	yes				1		1	2
Methamphetamine	yes	1						1
Darbepoetin	yes		3					3
Salbutamol			8	2		2		12 declared
							Total	22

TABLE 6b

UCLA Report on testing in Salt Lake City

Analytical positive cases that did not lead to sanctions

Substance	Number	Reason
Nandrolone	1	Breach of the chain of custody
Methenolone	1	IOC Control sample
Clenbuterol	1	IOC Control sample
Triamterene & Epitrenbolone	1	IOC Control sample
Stanozolol	1	IOC Control sample
Salbutalmol	12	Prior notification approved by the independent panel
Total	**17**	

TABLE 7

Positive samples planted by the IOC to test the Laboratory

Substance	Number	Status
Clenbuterol	1	Confirmed and Reported
Stanozolol	1	Confirmed and Reported
Metenolone	1	Confirmed and Reported
Triamterene + Epitrenbolone	1	Reported, but not confirmed